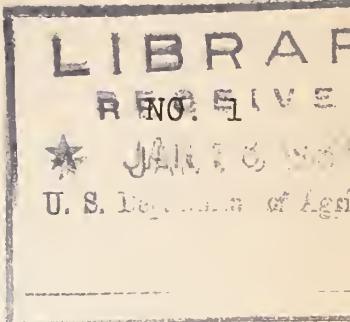


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January, 1933



## THE BLISTER RUST NEWS

Issued by the Division of Blister Rust Control  
and the Cooperating States

CONTENTS

	Page
Administrative Notes.....	17
Blister Rust Control in Pennsylvania - 1932.....	8
Blister Rust in Mixed Stands.....	13
County Woodlots Show Improvement.....	8
Determining the Urgency for Reeradication.....	7
Do White Pine Owners Continue Eradication Work After Initial Work has been Performed?.....	14
Finding of Blister Rust Infections in Rhode Island Nursery Shows Necessity for Nursery Sanitation.....	2
Fourteen to Go!.....	2
Inform Cooperating Pine Owners of Possibility of Pine Infection Appearing after Ribes Eradication.....	7
Nine Years' Progress of Blister Rust Damage on a Small Plot in Vermont.....	12
Note to Field Employees.....	16
Private Cooperation Sustained During an Off Year.....	9
Publications.....	18
Rhode Island Editor Sees the Advantage of Blister Rust Control.....	10
Society of American Foresters Recommends Establishment of Committees to Study Blister Rust Problem.....	11
Speed of Eradication Crew as it Affects Effectiveness and Cost of Control.....	3
White Pine in Upper Michigan - Then and Now.....	15
White Pine Plantation in Vermont Shows Good Growth.....	11

U. S. Department of Agriculture  
Bureau of Plant Industry  
Division of Blister Rust Control  
Washington, D. C.

FINDING OF ELISTER RUST INFECTIONS IN RHODE ISLAND NURSERY

SHOWS NECESSITY FOR NURSERY SANITATION

A. W. Hurford, R. I.

On May 2, 1932, Agent A. C. White and members of the State blister rust control crew found blister rust infections on ornamental white pine trees in Cranston, Rhode Island. These trees were infected while growing in a local nursery. (This was reported in the May, 1932, issue of the Blister Rust News.) I later examined the trees personally, and on May 12 with the assistance of the crew men made a study and record of the white pine infections on six trees. The data secured is given below:

<u>Date of Origin of Infection</u>	<u>Kind of Infection</u>	<u>Age of Tree (years)</u>
1922	Branch	14
1923	"	15
1924	Stem	16
1924	One stem and one branch	14
1926	Branch	15
1929	"	12

The infected branches were cut off by an employee of the owner. The crew found eight cultivated currant and gooseberry bushes near the diseased white pines. These bushes were destroyed by the owner.

The owner of the local nursery informs me that these trees were sold and planted at Cranston in the spring of 1928 and 1929. Since finding these infected white pines, the nursery from which they were purchased, and the adjacent property within a radius of 1500 feet, have been scouted by the State crew in carrying on the State's nursery sanitation project. Seventy-seven cultivated currant and gooseberry bushes have been found and destroyed this year in and around this nursery. About 40 more bushes, growing within infecting distance of the nursery are to be destroyed next spring. This section of the State has been scouted to locate and destroy European black currants.

On November 30, 1932, I visited this nursery and found two pine infections. One tree had a branch canker of 1924 origin. Another pine, about 13 or 14 years old had a stem canker at the base of the tree of about 1920 origin. I believe that there are a few more pine infections in this nursery. I feel that our recent findings, even though only a few trees have been found diseased, again show the need for nursery sanitation.

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FOURTEEN TO GO!  
C. C. Perry, Mass.

A tabulation of the Massachusetts pine infection records on December 31, 1932, shows that blister rust infection on white pine has been reported in all but 14 of the 355 cities and towns in the Commonwealth. This shows an increase of eight townships during 1932. The 14 remaining "disease-free" townships are located on the Island of Marthas Vineyard, in residential Metropolitan Boston, and one lone town (Monroe) in western Massachusetts.

SPEED OF ERADICATION CREW AS IT AFFECTS EFFECTIVENESS AND  
COST OF CONTROL

H. J. Ninman

Effective blister rust control consists in the reduction, at a low cost, of Ribes plants within a white pine area to the extent that the leaf surface of the remaining Ribes for several succeeding years will be inadequate to constitute a source of white pine infections in damaging numbers. At Eau Galle, Wisconsin, in 1922 and 1923, experimental work was performed to determine the rate of speed at which a crew in line formation could do effective eradication work. The assumed standards of effective control (based on observation and study by the writer in the region) are that reasonable protection to the pine in this region is afforded when the Ribes live stem is reduced to less than 60 feet per acre, provided that no bush with more than ten feet of live stem remains. The practicability of Ribes eradication depends upon the cost of the work as compared with the producing value of the pine protected. For the purpose of this discussion it is assumed that the pine on the control area is producing a return of \$4.00 per acre per year.

The speed of a crew can not properly be measured by the number of hours spent in covering an area because of variations in time-consuming factors, such as the number of Ribes present. In this paper, slow speed refers to a painstaking examination of the flora in an effort to locate and pull every possible Ribes plant. Medium speed is synonymous with the regular speed of a standard eradication crew and permits sufficient time for a hurried inspection of all vegetation in addition to the location and eradication of readily visible Ribes plants. Fast speed permits sufficient time for the location and eradication of readily visible Ribes plants only.

Six plots containing 2.93 acres each were laid out on sandy loam soil in an area of mixed white pine and hardwood. Three plots were of slight brush type, while three were of a dense brush type. In this paper two plots, one of each type, are combined in the calculations for the results of slow speed, medium speed and fast speed.

All of the plots were worked by the same crew, in which five men worked in line formation and the foreman worked back of the line. Each lineman carried a pick. A data crew of five men made a full record of the number and size of the Ribes bushes eradicated, and also of the time consumed in each plot.

A careful check was made by the eradication crew in each plot after the original eradication, and the data crew made a full record of the Ribes pulled in making the check.

The number of Ribes pulled in each of two size classes, and the amount of live stem pulled in each class, is shown for slow speed, medium speed, and fast speed in Table I.

Table I

Crew Speed	Number of Ribes per acre			Live stem per acre in feet		
	Seedling class	Bush class	Both classes	Seedling class	Bush class	Both classes
Slow	111	77	188	23.3	343.9	367.2
Medium	141	75	216	25.3	440.7	466.0
Fast	137	139	276	25.2	717.5	742.7

In this paper all Ribes having less than six inches of live stem, which includes all of the one and two-year-old and most of the three-year-old Ribes as well as small individuals of greater age, are grouped and placed in the seedling class, while larger Ribes are grouped and placed in the bush class.

Table I shows that the number of seedlings pulled in the slow-speed area is less than that in the medium-speed area, and that the number of large bushes pulled is nearly the same in each of the two areas; but the total amount of live stem pulled in the medium-speed area is the greater. The total number of Ribes pulled in the fast-speed area is considerably greater than that in either the slow-speed area or in the medium-speed area, and the amount of live stem pulled in the fast-speed area is correspondingly greater.

In order to compare the efficiency secured in the area eradicated at slow speed with that eradicated at medium speed and at fast speed, the efficiency is calculated on the basis of the Ribes pulled in each area in the first eradication plus the Ribes pulled in the second eradication or check. The percentage pulled of the number of Ribes in each area in two size classes, and the respective number of feet of live stem in each class, are given in Table II.

Table II

Crew Speed	% based on number of Ribes			% based on ft. of live stem		
	Seedling class	Bush class	Both classes	Seedling class	Bush class	Both classes
Slow	86.05	82.80	84.68	87.59	93.60	93.20
Medium	71.57	75.00	72.73	71.07	90.07	88.76
Fast	60.09	77.65	67.81	60.14	90.38	88.86

Table II shows that the influence of the speed factor is more marked on the proportion of the number of Ribes located and removed than on the live stem located and removed. In other words, the added proportion of the number of Ribes located and removed at slow speed over medium speed and fast speed,

and at medium speed over fast speed, was made up of the smaller Ribes in each of the size classes. The point is further emphasized by the fact that the difference in percentage of the number of Ribes pulled at slow speed compared with that at faster speeds ranged from 14.48 to 25.96 per cent in the seedling class as against from 5.15 to 7.80 per cent in the bush class. While from the standpoint of white pine protection alone slow-speed eradication is somewhat superior to either medium-speed or fast-speed eradication, the former does not provide a job thorough enough to eliminate the need of a future eradication.

From the standpoint of preventing the local spread of white pine blister rust, the efficiency of the Ribes eradication work is determined by the potential Ribes leaf surface that remains after the original eradication. The number and size of Ribes that remain in the area constitute an approximate measure of the leaf surface. The number of Ribes, per acre, in two size classes, removed on the check from the slow-speed area, the medium-speed area and the fast-speed area, and also the corresponding number of feet of live stem removed, is given in Table III.

Table III

Crew Speed	Number of Ribes per acre			Live Stem per acre in feet		
	Seedling Class	Bush Class	Both Classes	Seedling Class	Bush Class	Both Classes
Slow	18	16	34	3.3	23.5	26.8
Medium	56	25	81	10.3	48.6	58.9
Fast	91	40	131	16.7	76.4	93.1

Table III indicates that after the initial eradication approximately three times as many seedlings remained in the medium-speed area, and five times as many in the fast-speed area as in the slow-speed area, and that the seedling live stem that remained was proportional to the number of seedlings. The table further shows that of the large-size bushes approximately one and one-half times as many remained in the medium-speed area and two and one-half times as many remained in the fast-speed area as in the slow-speed area. The live stem that remained in the medium-speed area and in the fast-speed area was proportionately greater than that which remained in the slow-speed area.

The total amount of live stem per acre that remained in the slow-speed area, 26.8 feet, and the amount that remained in the medium-speed plot, 58.9 ft. seems small enough in each case to assure protection of white pine in the area for approximately five years. However, it is doubtful whether the Ribes live stem was reduced sufficiently in the fast-speed area to assure adequate protection to the white pine for more than two years in a locality where some of the white pine trees are already infected with blister rust. The number of Ribes that remained, 91 of the seedling class, and 40 in the bush class averaging nearly two feet, comprising in all a

total live stem of 93.1 feet per acre, seems too great to assure anything but short term protection. On the other hand, it must be considered that the number of large bushes in the fast-speed area originally was nearly twice as great as in either the slow-speed area or the medium-speed area. It is more difficult to reduce the live stem to the same number of large bushes and to the same number of feet of live stem where large bushes are numerous than where they are fewer. In an area where Ribes are numerous, there are more of them in hidden or poorly visible spots than there are in an area where Ribes are less numerous, and therefore more Ribes are likely to be missed in the former area than in the latter.

Practicability of blister rust control depends as much on cost as it does on thorough work. In a certain forest type where control work is evidently justified by the white pine stand, it is important to determine the kind of work that is adequate for the protection of the pine in order to avoid the expenditure of more money than is necessary.

For the work performed in the areas under discussion, the cost per acre, the cost per Ribes plant including seedlings, the cost per foot of live stem, and the number of man hours per acre are given in Table IV.

Table IV

Crew Speed	Cost* on basis of total number of Ribes			Total man hours per acre
	Per acre	Per plant	Per ft. of live stem	
Slow	\$2.14	1.14¢	.58¢	4.75
Medium	1.09	50	.23	2.42
Fast	1.05	.38	.14	2.33

\*Cost computed at the rate of \$0.45 per man hour

The table shows, in the column under cost on basis of total number of Ribes, that the cost per plant in the area where slow speed was employed was approximately twice as great as that where medium speed was employed and approximately three times as great as that where fast speed was employed. Similarly, the cost per foot of live stem was approximately two and one-half times as great in the area where slow speed was employed, as that where medium speed was employed and four times as great as that where fast speed was employed. The cost per acre was twice as great where slow speed was employed as that where medium speed was employed and also where fast speed was employed.

The results indicate that slow-speed eradication work was not economical because the increase in proportion of Ribes population eliminated is too small to justify the high cost per acre. The medium-speed eradication was economical because the live stem was reduced sufficiently to protect the white pine for a period of about five years, at which time a second eradication

could be made, at about \$.60 per acre, which probably would assure protection to the white pine for six or seven years thereafter. The cost of the fast-speed eradication work was low, considering the large number of Ribes per acre. The work was effective under certain conditions.

In an area where no white pine trees are diseased with blister rust or where the pine infection is very light, more live stem may remain without danger than in an area heavily infected with blister rust. Moreover, when it is certain that a second eradication can be made as soon as the remaining Ribes show signs of infection a comparatively large number of small Ribes are less dangerous than in an area where a second eradication is not contemplated in the near future.

The writer is of the opinion that in the majority of areas medium speed is the most economical. However, under certain conditions fast-speed eradication may be more advantageous than medium-speed. Slow-speed eradication is advisable only in special cases where the value of the white pine warrants the extra cost.

January, 1933

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DETERMINING THE URGENCY FOR REERADICATION

E. M. Brockway, Mass.

Several days were utilized recently to scout in the towns of Hanson and Hingham in Plymouth County, Massachusetts, to determine in which of the two towns the necessity for reworking is the more urgent. Several blocks were traversed from corner to corner, and due to the number of young infections located in one block, we have decided that Hingham has the call over Hanson for 1933. This block in 1926 produced large numbers of wild Ribes, and I recall one cooperator who hired the tree warden's crew of three men, to work with our foreman. In an area of 300 acres in this block, 20,000 wild Ribes were found on the initial work. In all cases where recent infections were found there have been heavy concentrations of Ribes in the initial working. Before the December snow arrived some of the recurring young Ribes seedlings could be found. In one instance, two seedlings about 8 inches in height had apparently infected 18 young pines. Such evidence as this if sufficiently abundant makes a decision quite simple.

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INFORM COOPERATING PINE OWNERS OF POSSIBILITY OF PINE INFECTION  
APPEARING AFTER RIBES ERADICATION

J. F. Martin

Our informational work should make it clear to cooperators that blister rust infection which is not visible may exist in the trees at the time of Ribes eradication. Such infection would become noticeable three or more years after eradication causing injury and perhaps ultimate death to the diseased trees. If not properly informed of this possibility pine owners will very likely draw the erroneous conclusion that Ribes eradication is not effective in controlling the disease or else that the work was done poorly. In such cases, prevention by making cooperators understand this point before eradicating the Ribes is worth a pound of explanation three years after the bushes were removed.

COUNTY WOODLOTS SHOW IMPROVEMENT

Blister Rust Control Agent Secures Records on Forestry Operations

During 1931, Blister Rust Control Agent Brockway instructed his State inspectors to be on the lookout for evidence of woodlot improvements. At that time a card form was provided for the purpose, and while scouting the woodlands in search of wild currant and gooseberry bushes, the alternate host plants of the white pine blister rust, the field men secured the desired information. This plan was so successful in 1931 that it was decided to carry on again in 1932. The canvass each year is of necessity confined to the towns in which blister rust control work is in progress. During 1932 in the three towns of Marion, Middleboro, and Rochester, 25 owners were found who had improved their woodlots in one way or another. These owners had weeded their woodlots by eliminating the trees that will not be needed in the final crop; they have thinned the stands by taking out dead trees, many branched and forked wolf trees, and suppressed trees that have no chance to recover. Young trees 3-6 inches in diameter have been pruned of their lateral branches up to 16 feet, a saw being used to cut off the branches. These trees are the pick of the lot and so spaced as to make a good stand for the future.

The following figures will give some idea of the work that has been in progress:

- 254 acres have been weeded.
- 302 acres have been thinned.
- 354 acres have been pruned.

The figures quoted are not complete of course because many owners have done more or less work on a small scale for which no data were taken. The results are indicative of the fact, however, that some owners are taking a keen interest in the management of their woodlots in accordance with the recommendations of the forestry specialists.

(Extract from the "Plymuth County Farmer", Dec., 1932.)

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BLISTER RUST CONTROL IN PENNSYLVANIA - 1932

R. P. Fatzinger, Pa.

The Department of Forests and Waters cooperates with the Bureau of Plant Industry, U. S. Department of Agriculture, in white pine blister rust control work. During 1932 in Pennsylvania, 121 areas were protected through the cooperation of private owners, 100 projects were carried on by the blister rust agents without assistance from the owners, and 31 areas were worked in the State Forests by the personnel of the State forest districts.

This work resulted in the protection of 2,266 acres of white pine, requiring the examination of 20,007 acres, from which 720,952 wild Ribes and 3,342 cultivated Ribes were removed and destroyed. In addition, 57,059 wild and 7 cultivated Ribes were removed in the reexamination of 38 areas containing 2,428 acres of which 925 acres were white pine. A total of 22,435 acres was examined, and 778,011 wild and 3,349 cultivated Ribes were destroyed during the season.

In cooperation with the Pennsylvania Department of Welfare 2,055 wild and 52 cultivated Ribes were removed from lands adjacent to the forest nursery located at Rockview. The reexamination of the sanitation zones at the four State Forest nurseries resulted in the removal of 2,215 wild Ribes.

By adding the 1932 control results to previous years' work, Pennsylvania has, to date, covered in initial eradication 60,766 acres and destroyed 2,621.785 Ribes, and in reeradication work 5,016 acres.

The initial work has been completed on State owned lands in almost half the State Forest Districts. On privately owned lands the initial work is practically completed in four counties and has been started in four additional counties.

In order to inform the public about this disease and to secure the cooperation of the individual white pine owners, 414 initial interviews and 364 follow-up calls were made by the blister rust agents during 1932. In addition, 35 items on blister rust were published, exhibits were placed at two fairs, one roadside demonstration area was established, and over 3,400 publications were distributed.

(Extract from the Service Letter of the Pa. Dept. of Forests and Waters, for December 8, 1932.)

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#### PRIVATE COOPERATION SUSTAINED DURING AN OFF YEAR

G. Stanley Doore, Mass.

At the opening of the 1932 field season there was a real question in our minds as to whether private cooperation would be forthcoming for reeradication work in western Massachusetts to the same extent as for initial work. Early in the season news articles were inserted in local papers and continued throughout the season. Additional roadside displays were erected in towns where eradication work was in progress. Several public meetings were addressed. Two large field demonstration meetings were arranged. Public libraries and high schools were supplied with full sets of educational material, including window envelope mounts showing infected Ribes leaves. One large window display centered about a stereomotograph showing 25 colored slides depicting the life history and method of control operated for a full week. Personal letters were sent to nearly every town official. These letters advised of our work and solicited support and cooperation. An invitation was accepted to address the Rotary Club represented by 50 business and professional men from southern Berkshire County. Favorable reaction from each line of effort became apparent as time progressed. Some phases produced better results than others. Some brought immediate action in the field. Some brought good will. They all helped and cooperation began to pick up.

Thus, our first season devoted entirely to reeradication has proven most successful even during a big dip in the business cycle. One hundred and eighty-one land owners, consisting principally of farmers, contributed the equivalent of well over \$2,000. a near peak, even for initial cooperation in more prosperous years. We found that approximately one-fifth of the initial cooperators, still in control of their original holdings, have at one time or

another, tried to reeradicate wild Ribes from their lots without the aid of trained foremen. Their well meaning efforts are appreciated. They apparently lacked system and thoroughness, however, for many Ribes were missed. This shows conclusively that trained supervision is still needed. The "Back To The Farm Movement" required our attention more than ever before. We found that a great many farms and woodlots had changed hands since the initial work. This made it necessary to teach control methods to new owners. It is a time consuming project. Many owners whose land was formerly scouted at State expense, were induced to take active part in the reexamination program. Very few initial cooperators failed to take a hand in reeradication work. Those who did fail us had recently suffered financial reverses.

Owners wish to protect their pines, but they need encouragement and assistance from trained foremen to get good results.

January 2, 1933.

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RHODE ISLAND EDITOR SEES THE ADVANTAGE OF BLISTER RUST CONTROL

(Editorial from Providence Journal, Dec. 28, 1932)

"Protecting White Pine"

"The Japanese beetle is at least temporarily out of control in Rhode Island, and the corn borer is an unwelcome guest which officials have told us we must learn to live with, but the white pine blister rust, a disease which attacks one of the finest species of trees that grows here, is apparently yielding to control measures. There is much satisfaction in the knowledge that one of the several enemies which are attacking our gardens, fields and forests is yielding under the pressure of scientific methods.

"According to a report of the State Department of Agriculture, currants and gooseberries, which are host plants for the blister rust, have been eradicated on about 274,000 acres, and more than 17,000 acres have been inspected a second time to determine whether any new bushes have grown since the original eradication work was done. Contrary to popular impression, the greatest menace is not the cultivated plant of one or the other of these species but the wild plant, of which 200,000 have been destroyed as compared to 12,500 cultivated ones. Thousands of European black currant bushes have also been destroyed. The 274,000 acres mentioned include approximately 75,000 of white pine which have been protected since 1917. In a State as small as this, the latter acreage represents a substantial asset.

"Two other facts are well worth considering in connection with the eradication project. The first is that the acreage cost of eradication processes is very low, and the other is that more white pine plantations are being established each year, revealing confidence on the part of land owners that the disease will be kept in check. A large part of the planting has been done on the watersheds of municipal supplies for the primary purpose of preventing the loss of water through too quick a run-off after heavy precipitation. But some private planting has been done, and in either case the growing trees, which will some day be commercially valuable, are adding worth to the lands in which they are rooted."

WHITE PINE PLANTATION IN VERMONT SHOWS GOOD GROWTH  
F. H. Rose, Vt.

While inspecting a plantation at Chester, Vermont, a growth study was made to determine how rapidly the trees were growing. The trees were planted 20 years ago, spacing 6 by 6 feet. The plantation was protected from blister rust in 1921, and reeradicate work was carried on in 1927. A one-eight acre plot containing 116 trees was laid out and the following data taken concerning diameter, height, tree class, etc.

Growth

Tallest tree in plot.....	44 ft.
Average height.....	30 "
Greatest height growth in one year.....	42 in.
Average height growth per year.....	17 "
Largest diameter.....	9 "
Average diameter.....	5 "

Tree Class

Number of dominant trees.....	90
" " intermediate trees.....	25
" " suppressed trees*.....	1
Total trees.....	116

Ninety-four of the trees were well formed, while 22 trees, due to weevil or other injury, were poorly formed. Of the 94 straight trees, 76 were dominant or suitable for final crop trees. Six trees were infected with blister rust, five with trunk infections, and one with branch infections.

In conclusion, it would seem that white pine planted on good soil and protected from blister rust is one of our most valuable trees, and difficult to replace with substitutes when growth and quality are taken into consideration, especially if thinning and pruning of crop trees takes place at the proper time.

\* There were 25 dead suppressed trees that are not included in the data.

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SOCIETY OF AMERICAN FORESTERS RECOMMENDS ESTABLISHMENT OF  
COMMITTEES TO STUDY BLISTER RUST PROBLEM.

The Society of American Foresters at their 32d annual meeting, which was held at San Francisco December 12-16, passed the following resolution in regard to blister rust:

"Recommended the establishment of committees to study the best policy of cooperation between Federal and State governments and forest owners in the solution of the blister rust and forest insect control problems."

(From "Forestry News Digest". Jan., 1933.)

NINE YEARS' PROGRESS OF BLISTER RUST DAMAGE ON A SMALL PLOT IN VERMONT  
A. E. Fivaz

Late in October, 1923, Frank H. Rose and the writer laid out an infection study plot, 3/8 acre in extent, in Tunbridge, Vermont. The data obtained thereon were never published excepting for a brief mention of the percentage of trees found infected, in the Blister Rust News of December 10, 1923 (Vol. 7, No. 5, page 6). In October, 1932, Frank Rose and the writer reinspected this plot for the first time in nine years. The progress of blister rust damage on the plot during this interval may be of general interest.

A careful study of the plot, requiring about 32 man hours, was made in 1923. While the trees were not tagged, each one was climbed and the number of cankers by age of wood at point of infection was determined. At that time there were 164 pines on the plot. These were even-aged, 20 to 25 years old, and 15 to 30 feet in height with diameters ranging up to 10 inches. Of the 164 trees, 158, or 96 1/3 per cent, were found infected. A total of 2,779 cankers were counted on the 158 infected trees, over 70 per cent being found on 1919 wood. The oldest cankers found were on 1916 wood, indicating that the rust had been present on pine in the area not more than eight growing seasons. Of especial interest was the observation that many infections had occurred in the upper part of the tree crowns. It was believed that this high infection would counteract the damage retarding influence of long limbs of most of the trees, and result in considerable ultimate damage to the stand. Ribes hirtellum and cynosbati were abundant on and near the plot, 78 bushes with 990 feet of live stem being recorded for the plot area alone.

The 1932 examination was much less thorough than that of 1923. No Ribes data were taken and pine observations were made from the ground in relatively poor light, only 4 or 5 man hours being spent in this work. Consequently, only the outstanding cankers were seen and the trees listed as "healthy" are really those on which no infections were observed rather than trees definitely free of infection. Consideration should be given to this point in reading the comparison of data that follows:

	1923	1932
Total pines present - Suppressed.....	12	48
- Not suppressed.....	<u>152</u>	<u>108</u>
- Regardless of suppression.....	164	156
Pines missing in 1932.....	--	8
Total pines found infected - Suppressed.....	8	32
- Not suppressed.....	<u>150</u>	<u>99</u>
- Regardless of suppression.....	158	131
Total pines found to have trunk cankers.....	25	106

Total pines classed according to diseased condition:

Killed.....	.....	30
Infected, stem canker, top killed (tree dying).....	5	27
Infected, stem canker, top alive.....	.....	49
Infected, living branch canker near stem.....	136	3
Infected, living branch canker distant from stem.....	.....	19
Infected, all cankers found were dead.....	17	3

Total pines on which no infections found --- Suppressed.....	4	16
- Not suppressed....	2	9
- Regardless of		
suppression.....	6	25

It is probable that the 8 trees missing in 1932 were trees found dead or dying as a result of the rust in 1923 that had disintegrated and disappeared in the 9-year period to 1932. A striking accrual of damage is indicated for this period by the above figures. Taking as a basis the 164 trees present in 1923, the percentage killed, dying, or missing rose from 3 to nearly 40. The proportion of trees having stem cankers (including trees missing in 1932) likewise rose from 15 to nearly 70 per cent. The latter figures in each case indicate the destructive progress made by the rust not more than 17 growing seasons after the first pine infection occurred on this plot.

The increase from 12 to 48 in the suppressed pines on the plot indicates the degree to which the crown canopy closed during the 9-year period. It is interesting to note also that while the suppressed individuals represent about 31 per cent of the total trees, they comprise 64 per cent of those on which no cankers were found in 1932.

It is hoped that a more thorough recheck of this plot will be made in a few years to obtain data more comparable to those of 1923. This should include reinspection and measurement of the Ribes, since no eradication has been performed on the plot.

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#### BLISTER RUST IN MIXED STANDS

E. M. Brockway, Mass.

During the course of work in scouting for recent infections in the southeastern Massachusetts district, it was noticed how quickly some trees succumbed to the blister rust in comparison with other trees of the same size. It was noted further that in mixed stands the pines with trunk cankers seem to cling to life longer than do infected pines in pure stands. It has been contented that white pines in mixed stands grow faster than those in pure stands, due to the fact that the decomposition of the forest litter in mixed stands produces better and more available food. If this is so, it may be that trees in a mixed stand are able to withstand the disease better and live for a longer period. Of course, in the last analysis, the length of time required to kill a pine is not fundamentally important, but this difference in killing action seemed quite striking in this instance.

DO WHITE PINE OWNERS CONTINUE ERADICATION WORK AFTER  
INITIAL WORK HAS BEEN PERFORMED?

Agent G. S. Doore's recent answer to a question asked by Mr. Detwiler in the summer of 1931, may be of interest to our readers.

Question: What percentage of white pine owners (former cooperators) continue eradication work after the initial examination has been completed?

Answer: You may recall that the season of 1931 was one in which the entire efforts of our personnel were devoted to the location of and destruction of Ribes nigrum. Very little reexamination work with cooperators had been done up to that time; therefore, we were unable to answer your question.

This season we have devoted our time to reexamination work and have found that approximately 20% of the initial cooperators have tried at one time or another to do reeradication work. A few have made a business of that job but the majority have gone at it in a hit or miss fashion. Our experience this season indicates that individuals doing the work alone do not get the Ribes. This is due to a lack of Ribes vision and systematic working of the areas. They need encouragement along with the assistance of trained foremen.

We have noted other important factors this season which have a direct bearing upon continued control of the blister rust. A glance at the tabulated form will best explain our meaning. This concerns the town of Sheffield where 18 properties changed hands since initial eradication. The "back to the farm movement" has something to do with this point. The 14 initial cooperators came as the result of widening protective zones and from inaccurate records.

Sheffield, Massachusetts, 1932

	<u>Number of Cooperators</u>	<u>Area Examined in Acres</u>	<u>Number of Wild Ribes</u>	<u>Expenditure by Cooperators</u>	<u>Per Acre Cost</u>
Initial cooperation	14	1,465	6,569	\$137.40	\$0.09
Reeradication by same owner who did initial eradication	59	8,473	22,271	550.80	.065
Reeradication by new owner where initial work done by other parties	18	2,015	4,565	145.00	.07
Total	91	11,953	33,405	\$833.20	.07

WHITE PINE IN UPPER MICHIGAN - THEN AND NOW

H. N. Putnam

At the outset it must be clearly understood that to Mr. John K. Kroeber, Blister Rust Control Agent in Charge, upper Michigan, goes the credit, not only for all of the information on which this article is based, but also for the central idea expressed. I serve merely as a recorder of Mr. Kroeber's thoughts on the matter.

In the table shown following is a statement by counties of acreages of standing white pine mature timber in 1897 contrasted with estimates of present stands of white pine and white pine planting sites.

TABLE NO 1

Past and Present Acreages of White Pine in Upper Michigan.

County	Standing* Mature White Pine Timber 1897(acres)	White Pine Type 1931 and 1932, (Acres)				
		Good Stands	Scattered Stands	White Pine Planting Sites	Total Present Acres	Source of Present Information
Algier	22,800	500	2,500	50,000	53,000	Observation
Baraga	61,000	100	500	5,000	5,600	Do
Chippewa	69,940	300	2,500	50,000	52,800	Do
Delta	27,321	1,500	1,000	50,000	52,500	Pine scouting 1931
Dickenson	23,780	1,320	1,200	35,000	37,520	Do.
Gogebic	32,800	115	926	0	1,041	Do.
Houghton	41,750	500	500	15,000	16,000	Observation
Iron	31,860	12,500	25,000	40,000	77,500	Pine scouting 1931
Keweenaw	9,885	0	500	5,000	5,500	Observation
Luce	5,000	500	1,000	50,000	51,500	Do.
Mackinac	10,563	300	500	50,000	50,800	Do.
Marquette	85,690	9,068	15,000	50,000	74,068	Pine scouting 1932
Menominee	19,890	1,000	1,500	50,000	52,500	Do.
Ontonagon	63,280	10,000	15,000	10,000	35,000	Observation
School- craft	61,367	83	25,000	40,000	65.083	Pine scouting 1932
Total	566,926	37,786	92,626	500,000	630,412	

\*From "Fourteenth Annual Report, Bureau of Labor Statistics (Michigan) 1897".

The acreage of white pine shown in 1897 includes only that of mature timber. At the present time practically no stands of white pine in upper Michigan are more than 60 years of age. A considerable amount of the present white pine acreage classified as "good stands" support white pine of 41 to 60-year age class. Obviously, then, there must have existed in 1897, 35 years ago, fairly extensive areas of young white pine not included in the acreages shown in 1897.

The material in Table No. 1 is not presented merely to show that the white pine lumber has been so greatly depleted in the last 35 years. That is an old and well known story. The chief significance lies in the fact that areas now nearly or entirely denuded supported merchantable white pine only thirty-five years ago. Repeated fires have occurred on many of these areas, destroying young growth and burning organic material in the soil. However, we must not conclude that because of repeated burnings the soil will not grow white pine. It is a well known fact that white pine seeds require mineral soil for their germination and development into trees. The fact that no large areas of young white pines now exist in upper Michigan is chargeable largely to the frequency with which fires occurred. A single fire sweeping over a white pine forest exposes the mineral soil and permits the germination of surviving seeds if any, stored in the duff and top soil. If a second fire occurs before the young pine have produced seeds, there are no viable seeds left to regenerate the species, which thus disappears from the area.

That white pines will grow well when planted on denuded areas is evidenced by many young plantations making splendid growth. The fact that a white pine site is now lacking in white pine growth is not due to a lack of soil elements necessary to their growth. There is ample support for the belief that with fire, insect and disease control, and intelligent reforestation on a large scale, the Lake States region will again be the center of the world's supply of white pine lumber.

Note: U.S.D.A. Technical Bulletin 92 shows that Michigan originally had 35-1/2 million acres of forest, of which 18-1/2 million acres bore a total stand of 190 billion board feet of pine. The pine made up about half of the total timber stand of the State. Today, as shown by Putnam in his report, there exists in Michigan about one million acres of white pine made up of 272,574 acres of good stands, 722,942 acres of scattered stands, and 34,630 acres of planted pine. This is about 6% of the original pine acreage. The present total land area of Michigan that is available for timber production is 19,700,000 acres or almost the same as the original acreage of pine forest. To a large extent, it actually was original pine forest and should again come back to pine, if protected from fire and blister rust. The scarcity of Ribes on a large part of the land where white pine is now growing, or where it should be planted makes it possible for Michigan to control this disease readily and favors this State above most others in becoming again a large producer of pine. Putnam estimates 766,000 acres of planting sites in only a few counties of upper Michigan.

J. F. Martin

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NOTE TO FIELD EMPLOYEES

H. P. Avery

Employees are requested to keep copies of the Official Record in their files for future reference. Memorandums by the Secretary and P.B.A. circulars are printed in the Record and we find it necessary occasionally to call attention to them when issuing instructions on the subjects pertaining thereto.

ADMINISTRATIVE NOTES  
H. P. Avery

Express Shipments

A recent memorandum to the Director of Personnel and Business Administration of the Department calls attention to the fact that express shipments are being made by some employees without a declared value. The regulations require that valuations be placed on all express shipments. The express company employees are instructed not to accept shipments until a valuation is declared. For a valuation of \$50.00 or under there is no additional charge, but for a valuation of over \$50.00 there is a charge of 10 cents for each \$100.00 or fraction thereof. A valuation must be placed on all shipments made on Government Bill of Ladings, and this should appear on both the package and the Bill of Lading form. In case of more than one box or package shipped on a single Bill of Lading, the valuation should be marked on each box or package as follows: Value \$\_\_\_\_\_ on 3. (Three representing the number of packages in the shipment.)

Order Field Forms Now

Look over your stock of forms at this time and see if you have a sufficient supply to last throughout the coming field season. It is necessary to get the orders in long before the main field work begins because it will take several weeks to have the forms printed should our present supply be inadequate to meet the demands.

Circular Letters for the Public

The attention of employees is called to an extract of a recent letter from Mr. Allanson, Assistant Chief of Bureau, relative to approval of circular letters before they are sent to the public. He says:

"Generally speaking, circular letters which go to the public outside of our employees and cooperators should have at least review by the Division concerned. Where a letter does not touch on questions of policy or where any policy involved has heretofore been clearly established, it seems to me that the approval by the head of the Division should be adequate. Where the subject matter might be controversial or where any question of new policy is involved, the head of the Division should refer the letter to the Chief of Bureau for consideration."

This expresses the general policy of the Bureau in the matter of circular letters to be distributed to persons outside of our own employees and cooperators, and where in the course of your work any doubt exists in this matter, the letters to be distributed should be referred to your Washington Office for approval.

January 5, 1933.

PUBLICATIONS

Anonymous - "Control of the White-Pine Weevil", Journ. of Forestry, Vol. XXX, No. 7, Nov., 1932, p. 800-804. (Committee Report, New England Section, Society of American Foresters)

Behre, C. Edward - "Change in Form of Red Spruce after Logging and of Northern White Pine after Thinning", Journ. of Forestry, Vol. XXX, No. 7, Nov. 1932, p. 805-810.

Cope, J. A. - "Northern White Pine in the Southern Appalachians," Journ. of Forestry, Vol. XXX, No. 7, Nov., 1932, p. 821-828.

"The author makes an interesting report of the occurrence of white pine in the southern portion of its natural range. Lumbering, fire and insects have materially reduced its distribution and it meets aggressive competition from the southern pines in some localities for occupation of abandoned fields. Its excellent growth rate, however, indicates that the species should have an important place in southern mountain forestry. The author found little real danger from the blister rust or weevils."

Deen, J. L. - "A Survival Table for Even-Aged Stands of Northern White Pine", Journal of Forestry, January, 1933, Vol. XXXI, No. 1, p. 42-44.

Hirt, Dr. Ray R. - "Blister Rust - A Serious Disease of White Pine". A three-page folder published by the New York State College of Forestry, Syracuse, New York, 1933.

Mielke, J. L., and J. R. Hansbrough - "Susceptibility to Blister Rust of the Two Principal Ribes Associates of Sugar Pine", Journ. of Forestry, January, 1933, Vol. XXXI, No. 1.

To secure information on the susceptibility to blister rust of the two principal Ribes associates of sugar pine (*R. roezli* and *R. nevadense*) a large number of these plants were imported into British Columbia where they might be tested under heavy rust-infection conditions. Results of the tests, which were conducted over a period of three years, show that both these California Ribes are high in susceptibility to the blister rust.

Spaulding, Perley - "Leigh Humboldt Pennington, 1877 - 1929", Phytopathology, Nov. 1932, Vol. XXII, No. 11, pp. 873-877. A biographical sketch which tells of the sterling qualities of Dr. Pennington and his untiring devotion to his profession.

Strong, Lee A. - "White-Pine Blister Rust Quarantine Enforcement", Report of the Chief of the Plant Quarantine and Control Administration for the Fiscal Year Ended June 30, 1932.

Wood, O. M. - "An Example of White Pine Reproduction on Burned Lands in North-eastern Pennsylvania", Journal of Forestry, Nov., 1932, Vol. XXX, No. 7, p. 839-845.

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THE BLISTER RUST NEWS

Issued by the Division of Blister Rust Control  
and the Cooperating States

CONTENTS

	Page
A Virgin Pine Stand .....	24
Blister Rust and the Rural Schools .....	28
Blister Rust Cankers and Tree Growth .....	32
Blue Ribbon Plot Contest in Connecticut .....	34
Essex County, Massachusetts, Plans Ten Year Program for Improvement of Forest Conditions .....	35
Examples of Infection Centers in Maine .....	27
Highlights on the Chemical Suppression of Ribes in the Far West .....	25
Ideal Weather for Black Currant Location Work on Cape Cod, Massachusetts .....	30
Maine Town Manager Expresses His Appreciation of Last Season's Blister Rust Control Work .....	30
Massachusetts Committee Includes Blister Rust Control as Possible Unemployment Project .....	23
Natural Reproduction of White Pine Considered Satisfactory in the Pedlar River Basin .....	29
Notes from District 7, New York .....	24
Observations from Vermont .....	33
Publications .....	30
Reactions to Blister Rust Displays .....	21
Society of American Foresters Hold Meeting at Syracuse, New York .....	27
State Planting Exceeds Federal .....	33
Successful Blister Rust Meeting in North Egremont, Massachusetts .....	36
Synopsis of Blister Rust Control Work in Maine - 1932 .....	20
Western White Pine Produces Viable Seed at an Early Age .....	36
White Pine Stumpage Prices in the Northeast in 1931 .....	31

U. S. Department of Agriculture  
Bureau of Plant Industry  
Division of Blister Rust Control  
Washington, D. C.

SYNOPSIS OF BLISTER RUST CONTROL WORK IN MAINE - 1932

W. O. Frost, Me.

In spite of the present unfavorable economic conditions, the slump in white pine values, etc., it is very encouraging to report an increase in blister rust control work in Maine during 1932. Control work was conducted in 56 towns and cities in 13 counties, and 34 of the towns appropriated cooperative funds. The eradication season began May 9 and ended September 10, with eight experienced temporary men being employed for advance scouting and for the supervision of eradication crews. Each blister rust agent supervised two to six eradication crews during the season, each crew consisting of four to six men.

Blister rust control helped solve the unemployment situation in nine cities and towns, 66 men being employed approximately 14,000 hours at a cost of \$4,045.24. The scale of wages averaged around 30 cents per hour, some towns making cash payments while others paid only a portion in cash and held out the balance for future payments in the form of groceries, clothing, fuel, etc. The towns financed the work, and upon its completion the State reimbursed the towns in the amount agreed upon (50%). These unemployed men, after a few days training by our agents, and supervised by trained foremen, did satisfactory work, with beneficial results to all parties concerned - to the men themselves and to the taxpayers. Undoubtedly more use of welfare funds on control work will be done in the future now that it has been tried out and found effective by town officials and taxpayers.

The following data shows the control work performed in 1932. This includes town and State initial eradication, private initial eradication, town and State reeradication, private reeradication, and eradication by scouts.

Total acreage worked*	79,701 acres
Total number of wild <i>Ribes</i> eradicated (including checking)	905,810
Total number of cultivated <i>Ribes</i> eradicated	4,726
Total cost to all parties (Federal, State, Towns, Owners)	\$16,626.56
Per acre cost	0.21
Average number of <i>Ribes</i> per acre (including scouting)	11

Very few *Ribes nigrum* have been found in Maine - some years not a bush. This year two plantings of about 225 plants were found in Augusta. They were heavily infected, but the nearby pines do not yet show the expected infection.

In addition to the above-mentioned control work, blister rust cankers were removed from diseased trees in 11 towns in 6 counties. 80,000 trees were examined, 47,000 trees treated, including 479 large ornamental pines, 14,000 branch cankers and 1,310 trunk cankers removed, and nearly 6,000 dead or doomed ornamental and plantation pines removed, at a cost of \$977.12. This work is recommended - it is money well spent, otherwise the majority of many plantations and ornamental pines would be a total loss.

\*Eliminated acreage of 41,739 acres is not included.

within a few years. Pine infection of 13% to 50% in the areas treated bears out this statement. (Note: This work was performed on the properties of cooperating pine owners in connection with the eradication of Ribes, for the purpose of controlling the rust and reducing pine losses by preventing established cankers from killing the trees. The owners desired that part of the money they contributed for control work be used in saving as many of the infected pines as possible. The work was confined to removal of the diseased parts of the trees. No tree improvement work of any sort was performed, such as removal of uninfected dead branches, etc. Saving infected pines by cutting out the diseased parts requires expert knowledge of the different stages of development of blister rust cankers, timely removal of the affected parts, careful follow-up yearly inspection to get those cankers that were in unrecognizable stages of development when the initial work was done, and thorough Ribes eradication. - J.F.M.)

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#### REACTIONS TO BLISTER RUST DISPLAYS

G. Stanley Doore, Mass.

During 1932 a total of 16 blister rust displays were set up in Districts 7 and 9 in Massachusetts, at locations where the greatest number of people could be reached, or in towns where actual eradication work was in progress. Of these displays, 7 were roadside demonstrations, 2 were window exhibits, 5 were schoolroom displays, and 2 were the new 1932 type of fair exhibit. The reactions of some of the people viewing these displays, as noted by our field foremen and reported at the close of the season, are related below:

Foreman Barnard writes: Mr. Cosgriff was very much interested. Welcomed me on my arrival. Had seen the display at Turner's and wanted me to see some trees of his own that he was sure had the disease and were infected and they proved to be. Display was a great help in this case.

Foreman Caldwell writes: Cooperators influenced by blister rust display in the Turner Hardware Store: Dr. Altaraz, Gould Farm, Smith & Larrimore, and Dr. E. S. Smith.

Foreman Chenot writes: Mr. Murray, owner of a farm, mentioned display at Gibson's Grove, Lake Buel. He commented very favorably on it but he didn't seem to think much of the idea of having specimens with cankers on display so near to pines. He seemed to think that perhaps that would infect the pines around there. However, I explained to him that there was no danger from these specimens used for display purposes.

Foreman Collins writes: Mr. Corser spoke quite favorably in regard to the display at the Turner Hardware Store. The story wasn't quite clear in his mind until he saw the display although he had cooperated on the initial eradication work. I called on him the same week that the display was at Turners, after he had seen it. I made a few points clear to him and he furnished a man for about a week.

Foreman Reeve writes: Mr. Roraback, after looking over the exhibit at Great Barrington Fair last year, has pulled up all Ribes he has found on his land and cut down all infected trees. Previous to seeing exhibit at Fair, he had never known much about white pine blister rust.

Mr. Siter, owner of considerable pine at Prospect Lake and operator of the recreation center, asked us to maintain a permanent display at the resort because it was instructive and so many seemed interested in it. He has reexamined his lands for Ribes and has pruned and thinned his white pine areas.

Mr. Foss, former secretary of our local Chamber of Commerce, located at the information booth where a miniature display has been maintained, remarks that, "You'd be surprised at the number of people who look at that display and then ask all sorts of questions about the disease."

At Monument Mountain one of our largest type of roadside displays continues to draw a great deal of attention from the public. Thus far we have never heard any adverse comment about it.

The large window display in the Turner Hardware Store in Great Barrington did receive a great deal of attention from the public. Several very specific approvals were voiced by Messrs. Weston, Drumm, Foss, Cosgriff, and Farrington, and Mr. Herre of Alford asked for immediate assistance in re-examination work as a result of the display. Mr. Herre, Superintendent of the Ives' estate in Monterey, also made arrangements for the reexamination of that property. One school teacher from New York State asked for, and received, a set of educational material like that sent out to high schools and public libraries. From the Dr. Altaraz School in Monterey came a request for a talk on the rust with slides. It created in Mr. and Mrs. Langar of Monterey such interest as to prompt a telephone call to your agent to arrange a similar display in that town. We complied with their request and this led to a field demonstration to a group of 60 people which was followed by one private cooperator spending \$94.00 for Ribes eradication work.

Several prominent business men made favorable comments concerning the display at the Berkshire Inn. The new type (1932) agricultural fair display was well received at Great Barrington and Northampton. The marked contrast of the living with the dead trees drew forth numerous favorable comments. The Gibson's Grove display incited one pine owner to action with a crew. Similar action was taken by two other owners, also furnishing crews.

Your agent accompanied by friends on a Sunday afternoon stopped to inspect a roadside display in Monterey but before we could get out of the car the owner of the establishment, upon whose building the exhibit was nailed, advanced to serve our needs. Since your agent was dressed in his Sunday clothes the operator of the stand did not recognize him, and to further conceal identity the head was turned while members of the party began to draw out the stand operator on the subject of blister rust control. It was a very interesting conversation and very accurate too. If every person permitting us to place displays on their property get the story about the rust, and are as willing to further the cause of control methods as this gentleman was, we are assured of much added cooperation.

A Sunday clam bake was held in the vicinity of a display at another recreation center in Monterey. Your agent attended this gathering and plied work along with pleasure. A Mr. Cordes, superintendent of an estate, had just seen our display before joining our group shucking clams. He was introduced to the party and shortly the subject of blister rust control came up for general discussion. Suffice to say, Mr. Cordes cooperated by clearing 16,800 wild Ribes from 100 acres of land at a total cost of \$68.80. More cooperation from this source will be available in 1933. This comes as a direct result of a display plus personal contact. There are many other instances of a similar nature which all go to prove that the displays are very much worth while, especially when the cost of their production is so small.

(Note: Mr. Doore gave a good description of the new 1932 type of fair exhibit in an article entitled "The Living and the Dead on Display", which appeared in the October, 1932, Blister Rust News - Editor)

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#### MASSACHUSETTS COMMITTEE INCLUDES BLISTER RUST CONTROL AS POSSIBLE UNEMPLOYMENT PROJECT

The Joint Committee of the Massachusetts Selectmen's Association of the Massachusetts Forestry Association, recently submitted its report recommending an ambitious program that would make use of 1,000,000 acres of idle waste lands for commercial timber growth. The report points out that:

Sound forest management requires a variety of operations such as: clearing land, nursery work, planting, weeding, thinning, pruning, girdling, cordwood cutting, logging and sawing, as well as protection against fire, insects and fungi. Protective measures consist of the building and maintenance of forest roads, trails, telephone lines, lookout towers, water holes, fire lines, and actual fighting of forest fires. They include forest fire patrol, public education, suppression of insects by spraying, creosoting, or by special silvicultural methods and in pine regions the removal of currant and gooseberry bushes to control the white pine blister rust. The building, maintenance and supervision of camps, the development of parks and wild life refuges will provide employment for large numbers. Only a few of these activities require special training for the workers and they will provide suitable employment for the office man as well as for the day laborer.

The final recommendations of the committee are:

1. We recommend immediate legislation to establish permanent unpaid unemployment relief committees in all cities and towns.
2. We recommend consolidation of agencies dealing with forests and shade trees in towns as essential to efficient management in the program of unemployment relief.

NOTES FROM DISTRICT 7, NEW YORK

B. H. Nichols, N.Y.

We have had a very open winter so far in District 7, New York. In December there was about 5 or 6 inches of snowfall which all disappeared and we did not get any more until January 27 and 28 when we had about the same amount as in December.

Agent Holcomb and I have been working in Clinton and Essex Counties, checking over pine areas which were worked from 1923 to 1927 inclusive. This has been very interesting work. One should do some of this work to become thoroughly convinced that our eradication work in the past has been of great value. A large amount of reproduction from 3 to 5 feet in height now stands where there were young pines from 6 to 12 inches high when initial eradication was performed. At that time 90% of the young pines were dead or dying. So far in our work this winter it has been hard to find a place in this reproduction having 3% of new infections.

We have been checking up on the infection on these areas, which covers the years 1914 to 1932, and recording the same for branch and trunk cankers. We find that the percent of infection before eradication work was performed ranged from 70 to 95.

Because of the open winter we have, in a good many cases, been able to locate Ribes, particularly the American black currant, along brooks and swamp land - the same places where they had been found growing in abundance at the time initial work was performed.

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A VIRGIN PINE STAND

L. B. Ritter, Minn.

We still have some virgin pine in Minnesota. In company with a competent timber estimator, I recently had the pleasure of looking over a 180 acre stand of 200-year old white and Norway pine. Our estimate for the 180 acres was six million feet; cull less than 5 per cent. The logs will cut almost 15 per cent select and over 25 per cent shop grades. The stand is over 60 per cent white pine, in diameter up to 40 inches, D.B.H. The average Norway pine is 100 feet high, while the average white pine is 110 feet in height.

Due apparently to a surface fire that occurred some 20 years ago, the reproduction under the mature trees is excellent - the finest eastern white pine reproduction I have ever seen under the parent trees.

The stand is located in the south half of S. 31, T. 157 N., R. 26W, 5th P. M., in the Pine Island State Forest, and in private ownership. The stand itself is practically Ribes free, but the cedar swamp bordering it undoubtedly contains an abundance of Ribes.

HIGHLIGHTS ON THE CHEMICAL SUPPRESSION OF RIBES IN THE FAR WEST  
H. R. Offord, California

On excellent authority it can be said that the destruction of Ribes petiolare by chemical methods, as devised by the Division of Blister Rust Control, is one of the largest and most successful jobs of its kind in the history of the chemical suppression of noxious plants. Yet, regarded in the light of what the Division would like to do, the writer regards the accomplishments of the project with something of the same feelings that prompted a punctilious Greek, while performing the funeral rites of an infant daughter, to make his excuses to the spectators for "bringing out such a ridiculously small corpse to so large a crowd". In this spirit of humility, the status of the chemical suppression of Ribes in the far west will be briefly reviewed in order to bring to the attention of all field supervisors the advantages and limitations of chemical work.

The potentialities of chemical eradication should be considered under the following headings: (1) As a general method to be applied under all or nearly all field conditions; (2) as a special method to be used for occasional areas when eradication by other means is too costly; and (3) as an auxiliary method for individual bushes difficult or impossible to eradicate by hand pulling. A few examples of each class of work will give significance to these work-classifications and at the same time suggest the practical limitations of each method.

Chemical destruction a general method. The application of aqueous sodium chlorate one pound per gallon to the aerial parts of R. petiolare, a stream-type Ribes of north Idaho, is the only general method now being used in control work. The statement that this species is eradicated by chemical means does not imply that an occasional isolated clump of R. petiolare may not be hand pulled. Field tests have shown that R. erythrocarpum can be effectively destroyed by similar treatment presumably at lower cost than hand pulling. Distribution of this species, however, is very limited, being confined to a narrow belt (Hudsonian zone) in Crater Lake National Park.

Chemical destruction a special method. Although a certain Ribes species may be ordinarily amenable to hand pulling or mechanical methods of eradication, areas are sometimes encountered wherein Ribes grow in such numbers or under such conditions that both types of work are economically impractical. Under these conditions chemical methods may find their greatest usefulness. In north Idaho and the northern sugar-pine regions of California, R. inerme presents one of the more important eradication problems of this kind. Thus far it has been impossible to place the eradication of R. inerme in the same category with that of R. petiolare; and although the success of "bulldozing" for the destruction of R. inerme has removed the urgent need for general chemical treatment, unfortunately this method is not universally applicable to R. inerme. For special problems on which mechanical equipment cannot be used, a combination hand pulling and chemical treatment has been proposed. In brief, the plan calls for preliminary hand pulling of all small plants and scattered bushes; the solid clumps or units of R. inerme which

remain are then drenched with aqueous sodium chlorate, one pound per gallon, at the rate of 30 to 50 gallons per square rod. Thickly populated areas of R. roezli, the most important Ribes in the sugar-pine regions of California, sometimes occur close enough to avenues of transportation to permit chemical treatment in place of a costly job of hand eradication. Diesel oil has proved to be 100 per cent effective when applied to plants growing in light, dry soil. The oil should be applied as a drench to aerial plant parts and soil at the rate of one gallon per 100 feet of live stem for large bushes or one pint per bush as a minimum for small plants. If the area is too moist to be successfully treated with Diesel oil, aqueous sodium chlorate may be used as a combination soil drench and spray at the rate of three pounds per 100 feet of live stem or a minimum dose of 0.2 pounds for small bushes. R. nevadense, difficult and costly to eradicate by hand pulling, can be treated with aqueous sodium chlorate precisely as recommended for moist locations of R. roezli. The suggestions that have been advanced for the treatment of R. roezli are applicable also to special problems of R. viscosissimum in north Idaho, though because of the higher moisture content of Idaho upland soils the use of Diesel oil may have to be more restricted.

Chemical destruction an auxiliary method. In the eradication of an upland species such as R. viscosissimum, R. roezli, or R. irriguum, one frequently encounters bushes that are difficult to pull by reason of size or rooting habit. Such bushes are not only costly to eradicate by hand pulling or grubbing but are often imperfectly pulled after considerable time has been spent on them. In these emergencies, it is suggested that sodium chlorate, sodium fluoride, or copper sulphate in solid form be applied to the scarified and dampened crown of the plant at the rate of 1/4 pound per bush. If the bush has not been broken off by the preliminary attempt at hand eradication, it should be cut off at the ground level before applying chemical to the mutilated crown. Ten pounds of chemical divided among a 4-man crew should be sufficient to care for the stubborn bushes encountered in the course of a day's work. The crew may also have to carry a small quantity of water for wetting the damaged crown. Whenever possible, pre-eradication data should be used to determine when a crew should be furnished with chemical.

Within the brief compass of this article it has been possible to give only a condensed outline of the use of chemicals in control work. Based on an analysis of all past work, field recommendations have been given for kind, concentration, and quantity of chemical and for method of application. The importance of such factors as soil character, kind and density of brush, and climate, have been implied rather than fully described. With the exception of soil moisture, which can be modified by draining, these factors are uncontrollable; as such, they may so influence the results of experimental work that more precise field recommendations than are here given cannot be made. Field supervisors are therefore urged to apply chemical methods on a combined basis of the suggestions offered in this paper and their intimate knowledge of the existing field conditions. In the words of an immortal bard, "go root away the noisome weeds that without profit suck the soil's fertility from wholesome flowers" and be sure to have some chemical as part of the equipment.

EXAMPLES OF INFECTION CENTERS IN MAINE

W. O. Frost, Me.

In December, Agent J. M. White and the State Agent examined a white pine plantation in the town of Mayfield, owned by a large timber-land owner. The trees in this plantation averaged four feet in height. One of the company's agents living near the plantation was questioned concerning blister rust conditions therein. He replied, "There is very little rust in it; I am watching it." However, upon carefully examining two rows of 155 trees, 24% of them were found to be infected, 19 branch cankers and 20 trunk cankers (19 living and one dead) being found. The age of infection ranged as follows:

Infection by Years

<u>1926</u>	<u>1927</u>	<u>1928</u>	<u>1929</u>	<u>1930</u>
1	1	5	23	9

Another example of an infection center is that of a plantation of 2,000 white pines planted in 1916 on an island in the town of Sorrento, 160 miles northeast of Kittery. In 1932 these trees were found to be 100% infected - none could be saved. The owner cut and burned the entire plantation. Wild gooseberry bushes were responsible for this loss.

The above examples should convince the most skeptical of the seriousness of blister rust unless controlled. However, more and more "skeptics" are becoming convinced of the seriousness of the disease and are adopting control measures, but not until the above conditions exist in many pine lots.

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SOCIETY OF AMERICAN FORESTERS HOLD MEETING  
AT SYRACUSE, NEW YORK

H. G. Strait, N. Y.

Members of the New York Section of the Society of American Foresters held their annual meeting at the College of Forestry Building, Syracuse, on February 4, starting at 10 a.m.. A fairly good representation was present and all enjoyed the program arranged by the Committee, of which professor Ralph Hosmer was the chairman.

Mr. H. L. McIntyre gave a very good report on the progress of forest pest control work in the State, together with some of the newer problems we are now dealing with in control work.

The main part of the meeting was devoted to papers and discussions on the general subject of hardwoods in forestry in the State. The subject was well handled and proved very interesting and instructive.

In the evening dinner was served at the University Club, followed by talks and pictures on European Forestry by J. A. Cope.

BLISTER RUST AND THE RURAL SCHOOLS

L. E. Newman, N. H.

With the idea of reaching adults (whether pine owners or not) through an indirect agency, and also as a slight contribution to the program of forest education among the schools, early last November plans were formulated for the purpose of presenting the subject of white pine blister rust to the school children from the fifth grade upwards, to and including junior and senior high schools, local academies and boys, preparatory institutions. Since the project was a new one in this State, it was thought best to try the idea out in BUT ONE district, before launching a State-wide program.

In order to obtain the backing of the State Board of Education, the writer interviewed the Commissioner, and secured his hearty approval and endorsement of the project. A standard address was prepared with the co-operation of Agent Richardson, in whose district the program was to be dried out. A mimeographed circular containing fifteen questions and answers was worked up, a quantity of Miscellaneous Publication #22 was obtained, and through the courtesy of the American Tree Association, a limited number of its new edition of "The Forestry Primer" was secured.

During this period of preparing the necessary subject matter, Agent Richardson interviewed district school superintendents, and outlined the proposition to them. He first attempted to enlist their cooperation and approval, and then prevailed upon them to give him a letter of introduction to the several teachers and high school masters, authorizing him to address the pupils.

The project got under way late in the month and was carried on continuously until the commencement of the Christmas holidays forced a temporary discontinuation of the program. Although, at the present time uncompleted, still the results obtained are numerous and interesting enough to warrant a short review.

During approximately five weeks time, in conjunction with his regular duties, Agent Richardson carried out this project in 18 towns; gave 86 talks in 53 schools, and spoke before classes aggregating 4,839 school children. He distributed 4,284 copies of Miscellaneous Publication #22; 1,232 copies of the Questions and Answers; and 351 Primers and forestry publications.

So far, several very interesting things have developed in this project. At the conclusion of one of his talks before the Lebanon Junior High School, Agent Richardson invited the class to pay him a visit some day at his office in case they had any further questions to ask. At the time he little thought this offer would be accepted. Only two or three days later, about 4 p.m., he heard the tramp of what sounded like a "young army" approaching his office. Much to his surprise, 17 high school students crowded and elbowed their way in the diminutive room, and for nearly an hour proceeded to launch a veritable barrage of questions relating to white pine blister rust. One of the pupils informed Richardson that his (the

pupil's) uncle owned white pine, and suspecting that blister rust was present, desired an inspection of his woodlot. The Agent has since advised the writer that this particular individual happened to be a pine owner that he has repeatedly tried to interest in blister rust but without success. "And, a little child shall lead them".

A few days later, while replenishing his gasoline supply at a "Standard" station, the wife of the proprietor inquired of Agent Richardson as to "just what was going on up at the high school." It seems that her son came home one day from school, and with considerable excitement, advised the family that its white pine was threatened by a serious disease, and voiced the opinion in no uncertain terms that something should be done about the matter. An inspection of the family woodlot was ultimately requested, and promised by the Agent.

Another outgrowth of these addresses was a request by several teachers that Agent Richardson give future talks on fire prevention and other phases of forestry, and also that he plan to conduct next spring certain classes into the woods and show them infection areas.

It appears that to date this blister rust agent has secured contacts with 208 adults, who, he claims, would probably never have been reached, and might still be ignorant of the rust had it not been for this educational program among the schools of his district.

If the foregoing proves of sufficient interest to the readers of "The Blister Rust News", we shall be glad to give a complete summary of results of this project in the March issue.

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#### NATURAL REPRODUCTION OF WHITE PINE CONSIDERED SATISFACTORY IN THE PEDLAR RIVER BASIN

Forest Supervisor H. M. Sears, Natural Bridge National Forest, Virginia, under date of January 25, writes:

"We have no immediate plans for extending our white pine plantations for the present. Our studies in the Pedlar Basin are indicating that natural reproduction of white pine and other desirable species occurs with sufficient rapidity to hardly justify artificial reforestation. We are carrying out some definite studies in some of the old fields, so that we will be able to determine rather definitely just what the progress of natural reproduction is to natural seeding, and until this work is more or less complete I believe it would be well for us to postpone any further plantations."

The Pedlar River valley has been scouted, 1929-1931, and has been found entirely free from Ribes with the exception of one of its small branches; namely, Staton's Creek. The forest officers have only removed 326 wild Ribes from about 5 acres on Staton's Creek. The absence of wild Ribes and the abundance of pine reproduction in the Pedlar River Basin make an excellent combination.

R.G.P.

MAINE TOWN MANAGER EXPRESSES HIS APPRECIATION OF LAST  
SEASON'S BLISTER RUST CONTROL WORK

The following letter of appreciation was received by Agent D. S. Curtis from the Town Manager of the town of Rumford, Maine:

"Dear Mr. Curtis:

Ever since the completion of this year's pine blister work in the Town of Rumford, I have intended to write to you to express my commendation of the results accomplished and the manner in which it was done. Our connections with all the officials of the State and National Government who were connected with this work were most pleasurable. As you know, there was some hesitancy this year concerning our participating in this matter, but due to the tactful way in which you people handled the matter it was voted to proceed with the work and now everyone is satisfied. The area covered and the thoroughness with which the work was done was a revelation to me, and we sincerely trust that next year it will be possible to extend further the terrain surveyed by you.

With deep appreciation of the accomplishments rendered by you personally and those working under you, I am,

Sincerely yours,

C. H. Bischoff,  
Town Manager."

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IDEAL WEATHER FOR BLACK CURRANT LOCATION WORK ON  
CAPE COD, MASSACHUSETTS

E. M. Brockway, Mass.

Three more townships on Cape Cod (Barnstable County), Massachusetts, were canvassed for Ribes nigrum during the mild weather in January. In this work notations are also made of the number of other cultivated Ribes, the location of white pine areas, especially plantations, and examinations are made for infection. The work this winter substantiates our previous findings that Ribes are not adapted for cultivation in the sandy soils of the Cape Cod section.

In the three townships of Dennis, Harwich, and Yarmouth, Ribes were under cultivation at only 49 locations out of a total of 4,130 properties. These plantings, moreover, consisted of only 679 bushes. Black currants were present in only seven of these plantings, with a total of a mere 34 bushes. The total area of the three townships amounts to 45,000 acres, the major part of which is of the pitch pine and scrub oak type.

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PUBLICATIONS

Haig, I. T. - Second-Growth Yield, Stand, and Volume Tables for the Western White Pine Type. U. S. Dept. Agr. Tech. Bul. 323. 1932.

Lindgren, R. M. and Chapman, A. D. - Field Inoculation of Pinus strobus with Sporidia of Cronartium ribicola in Minnesota. Phytopathology 23: 105-107. Jan. 1933, No. 1.

WHITE PINE STUMPPAGE PRICES IN THE NORTHEAST IN 1931

Henry B. Steer, U.S. Forest Service

Data on northern white pine stumppage prices for the calendar year 1931, obtained through the cooperation of the Division of Manufactures of the Bureau of the Census, have been compiled by the Division of Forest Economics of the Forest Service in continuation of a similar compilation for the years 1926-1930, given in the November, 1931, issue of the Forest Worker. To obtain as complete reports as possible in view of the unusual business conditions prevailing in 1931, the canvass of the Bureau of the Census was augmented by requests for reports from a carefully prepared mailing list of several hundred known owners or buyers of New England stumppage. Averages are based on replies received from a total of 409 firms or individuals, involving 123 transactions and more than 35 million board feet of white pine stumppage.

Only about half as much white pine stumppage was reported sold in 1931 as in 1930. Many of the firms and individuals reported that they had bought or sold no timber during the year. While a few sales of virgin timber were reported, by far the greater part of the timber involved was second growth. Prices of all white-pine stumppage reported sold in New England and New York in 1931 in pure stands or in mixed stands in which it was treated as an individual species are given in the following table:

State	Number of transactions	Volume of stumppage sold (1,000 bd. ft.)	Value	Average price per 1,000 bd. ft.	Price range
Connecticut	3	885	\$ 4,175	\$4.72	\$4.00- 6.00
Maine	30	15,406	111,800	7.26	3.50-14.00
Massachusetts	36	6,391	47,581	7.45	2.50-11.10
New Hampshire	39	11,705	64,774	5.88	2.00- 9.75
New York	7	446	3,507	7.86	4.50-15.00
Rhode Island	2	501	2,508	5.01	4.00- 8.00
Vermont	6	216	2,079	9.63	6.00-12.00
Total and average	123	35,550	236,424	6.65	2.00-15.00

Following is an analysis of 1931 sales by price-range classes:

Price-range class	Number of transactions	Volume of stumppage sold (1,000 bd. ft.)	Value	Average price per 1,000 bd. ft.	Percentage of total number of reports	Percentage of total volume reported sold	
						1931	1930
\$ 2.00-\$ 2.99	2	275	\$675	\$2.45	2	1	(1)
\$ 3.00-\$ 3.99	6	2,395	7,894	3.30	5	7	2
\$ 4.00-\$ 4.99	15	3,463	14,214	4.10	12	10	3
\$ 5.00-\$ 7.49	48	17,015	104,352	6.13	39	48	30
\$ 7.50-\$ 9.99	41	10,728	91,226	8.50	33	30	16
\$10.00-\$14.99	10	1,669	17,988	10.78	8	4	46
\$15.00-\$19.99	1	5	75	15.00	1	(1)	3
Total and average	123	35,550	236,424	6.65	100	100	100

(1) Less than one-half of 1 per cent.

Reports of a few sales of white-pine stumps in New England for less than \$4 per thousand board feet were made in 1931, but such sales formed only a small percentage of the total number; 82 per cent by volume of the white pine was sold at prices greater than \$5 per thousand feet.

The decline in white-pine stumps values during the past three years has not, in fact, been as severe as that in prices of most other commodities. This is indicated by the following comparison between stumps prices of white pine in New England and the average wholesale prices of all farm products, of hides and skins for tanning, of cotton textiles, and the purchasing power of the dollar, as compiled by the Bureau of Labor Statistics of the United States Department of Labor, (2) on the basis of 1926 values as 100 per cent:

Year	White pine stumps prices	Wholesale prices of all farm products	Wholesale prices of hides and skins	Wholesale prices of cotton textiles	Purchasing power of the dollar
1926.....	100.0	100.0	100.0	100.0	100.0
1927.....	108.7	99.4	120.4	97.9	104.8
1928.....	107.1	105.9	148.6	101.2	102.4
1929.....	90.3	104.9	112.7	99.4	103.6
1930.....	95.4	88.3	91.0	87.4	115.9
1931.....	76.2	64.8	60.2	71.3	140.6

(Extract from "Forest Worker" for January, 1933.)

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#### BLISTER RUST CANKERS AND TREE GROWTH

S. H. Boomer, N. H.

Is there any information available regarding the relation between tree growth and the growth of blister rust cankers? The writer has been lead to believe, by his own observations, that a thrifty, fast growing tree succumbs more quickly to blister rust than a slow growing tree. This seems to differ with the opinion expressed by Mr. E. M. Brockway in the December issue of the News.

A blister rust canker in its early stages as a trunk infection seems to stimulate height growth. In several instances in one plantation, unusually thrifty trees were found to have trunk cankers. One of these had a growth of 42 inches between whorls and was used as a part of a demonstration at a fair. Do cankers stimulate growth in their early stages?

(2) Wholesale Prices, 1930 (Bulletin 543); and Wholesale Prices of Commodities, December and Year 1931.

OBSERVATIONS FROM VERMONT

F. H. Rose; Vt.

Observations which I have made during the past season show that pine owners, regardless of present conditions and low prices for pine, will co-operate in the protection of their pines from blister rust the same as in the past. They realize that changing conditions necessitate the growing of better trees in the future, and despite the depression they are, in a good many instances, in a better position to protect their pine stands from blister rust and to improve them by pruning and thinning. This is due to the fact that many men and boys have returned to the home farms, and in some cases brought their families with them, so that it is much easier to form a crew for blister rust or other forestry work with farm labor than it has been in the past. Perhaps this is even more true for forestry work since this can be carried on during the winter months when there is little farm work to be done and no outside work can be secured. Thus it would seem that present conditions, because of the above facts, enhance rather than decrease the prospects for practical forestry work. Very little white pine has been cut in my district during the past few years, and it has been observed that a majority of pine stands have sufficient trees suitable in size and shape to form a valuable crop if protection from blister rust is given, and pruning and thinning practiced. I also find that individual owners, companies, towns, and villages are interested in doing this work.

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STATE PLANTING EXCEEDS FEDERAL

More than 155,000 acres were planted to forest trees in the United States in 1931, according to a summary of State reports compiled by the U. S. Forest Service. In 1930, 138,970 acres were planted.

More than 26,000 acres of the new planting was done by the Forest Service in national forests. Plantings in State forests totaled 58,989 acres, and forest planting on other State lands, 3,321 acres. Reported planting by individuals amounted to 29,624 acres. Of the 16,940 individuals making forest plantings, all but 1,869 were farmers.

(Extract from the Journal of Forestry for November, 1932)

Comment: Mr. Backus of the Forest Service has supplied us with the following additional data concerning the 1931 plantings: Municipalities 11,561 acres, industrial organizations 21,638 acres, other 2,254 acres, and schools and colleges 1,114 acres.

White pine is one of the most popular species for planting and now occupies second place in State planting. A tabulation made by myself from the Clarke-McNary reports to the Forest Service shows the following number of trees distributed from State nurseries in 1931 for the six leading species.

Red or Norway pine.....	31,029,862
White pine, <i>Pinus strobus</i> .....	18,358,442
Norway spruce.....	14,103,515
Jack pine.....	11,936,850
Scotch pine.....	5,581,042
White spruce.....	4,295,518

BLUE RIBBON PLOT CONTEST IN CONNECTICUT

The contest for the best private sample plots (as advertised in the "Nutmeg") closed on October 1. The judges were W. O. Filley, R. M. Ross, and A. F. Hawes. The thinning contest in these plots closed December 31, 1932.

The contest brought to light, as was hoped, ten interesting plots, two of one acre each, the rest of one-half acre. All but two are in Cornwall. One is in Somers and one in North Stonington. Two are in hardwoods and eight in softwoods. Two prizes of \$10.00 each were awarded to Mr. Charles Gold, the owner of the best plot, and Mr. Arthur Brooks, patrolman who reported this plot. The prizes were contributed by individuals interested in forestry.

The winning plot is one acre in a beautiful white pine and hemlock stand about 120 years old. There are 251 trees of which 92 are blue ribbon trees. These have an average height of 100 feet and range in diameter from 11 inches to 32 inches. The volume is estimated as 60,500 board feet, which is equivalent to an annual growth of 500 board feet during the entire life of the forest. The history of the plot is interesting. Mr. Gold's father purchased the area in 1870 with the intention of cutting it off for locomotive fuel. Just at this time the railroad company changed to coal, so the forest was saved. Selected large trees have been cut from time to time, but nothing of late years.

There were five other plots which had a larger number of blue ribbon trees. Mr. Kugeman's Plot No. 5 has 178 per acre, but the age is only 46 years. There were three plots which had a higher mean annual growth. Mr. Kugeman's Plot No. 4 which produced 51,000 board feet in 80 years, made an average growth of 655 board feet.

Comparison of Plots Entered in Contest

Cwner	Age Years Approx	Height Feet	Number			Total Volume Per Acre Bd. Ft.	Mean Annual Growth Per Acre Bd. Ft.	Trees			
			Trees per Acre		Total						
			Blue Ribbon	Total							
Gold.....	120	100	92	251	60,500	500	Pine & Hemlock				
Gold.....	120	80	76	198	15,000	125	Hardwoods				
Gold.....	80	95	132	442	51,000	637	Pine				
Kugeman..	67	76	126	440	43,800	655	Pine & Hemlock				
Kugeman..	46	59	178	450	24,000	522	Pine				
Calhoun..	64	60	74	346	20,500	321	Hemlock				
Calhoun..	100	78	58	286	28,500	285	Soft & Hardwoods				
Woolsey..	65	79	128	286	32,000	492	Pine				
Findley..	51	58	120	414	23,000	451	Pine				
Parks.....	77	65	62	478	10,500	137	Hardwoods				

(Extract from the "Wooden Nutmeg" for January, 1933. Published by the Conn. Dept. of Forestry.)

Mr. A. F. Hawes, Conn. State Forester, who was one of the judges of this contest, gives us the following additional information concerning these Blue Ribbon Plots:

"The idea of the Blue Ribbon Plot was given to us by Professor Illick of the New York State College of Forestry. He found that this method was in use in Germany except that in that country the bands were of other colors. Being conversant with the American custom of giving a blue ribbon to the best live-stock and other prize winners at country fairs, he adopted the idea of a blue ribbon for the best trees in the forest. We have established a number of plots varying from one-half to one acre both in the State forests and on private property. The best trees are marked with a blue ribbon to indicate that these will be left until the end of the rotation. Other trees interfering with the blue ribbons are taken out. There remains therefore after thinning, the blue ribbon trees and intermediate trees which will not interfere with them. This method has been quite helpful in arousing interest on the part of forest owners and I believe that it is capable of considerable extension.

"The Gold Pine Plot, which won the prize in the recent contest, is not the Cathedral Pines, which are owned by Mr. Calhoun. The Gold Pine Plot is a short distance from West Cornwall on the west side of the road going from West Cornwall to Goshen and Torrington. The Woolsey and Kugeman Plots are on the same road a little further south, and the Calhoun Plots are south of the Cathedral Pines. I visited yesterday the Calhoun Plots which have now been thinned and look very good."

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#### ESSEX COUNTY, MASSACHUSETTS, PLANS TEN YEAR PROGRAM FOR IMPROVEMENT OF FOREST CONDITIONS

A ten year program for the improvement of forest conditions in Essex County is proposed by the Joint Committee of the Selectmen's Association of Essex County and the Massachusetts Forestry Association in a report just completed after a long study.

This committee makes an appraisal of the sylvan beauty of Essex County, classifies its types of woodland, rates the residential areas as among the most attractive in the country, and outlines a program for each of the 29 cities and towns in the county, as well as a State policy, but suggests that it be spread out over a period of ten years.

Regarding the white pine blister rust, the committee has this to say:

"This foreign fungus is a double host disease which must spend part of its life cycle on the leaves of currant and gooseberry bushes. It cannot spread directly from pine to pine, as was the case with the chestnut blight, and if currant and gooseberry plants are eliminated for a distance of 900 feet from the pines, the latter are safe from this disease. The Federal and State agencies have worked out methods for the eradication of these plants, the cost of which is not prohibitive to the commercial growing of white pines. We urge all owners of white pine, natural or planted, to have their woodlands inspected to determine whether the disease is present, and if there is need of eradication of currant and gooseberry bushes. This inspection is provided free of charge by the State Department of Agriculture. Anyone planning to plant white pine should first have an inspection of the area and determine whether the blister rust is present."

WESTERN WHITE PINE PRODUCES VIABLE SEED AT AN EARLY AGE

Mr. D. S. Olson in the Journal of Forestry for November, 1932, gives some data on this subject. Writing of northern Idaho where hundreds of thousands of acres were burned over, he states:

"In recent years, an unusual number of new one and two-year-old seedlings has appeared on the white pine sites swept by the fire of 1910. The original stand of reproduction, resulting after the fire, was practically established in three years. The trees are from 6 to 20 feet high. Little additional reproduction appeared from about 1915 to 1925. From where have the new seedlings come? Apparently from the first cones which the 1910 reproduction is now bearing.

"Casual observations made over a long period show the following species bearing cones as early as the ages indicated below:

Pinus monticola.....	10 years
Pinus ponderosa.....	14 "
Pinus contorta.....	5 "
Picea engelmanni.....	16 "
Larix occidentalis.....	16 "
Thuya plicata.....	16 "

It seems from the above table that Pinus monticola gets as early a start in producing cones as any of the other species above mentioned, except the Lodgepole pine. Mr. Olson continues:

"Tests of 600 seeds each of seven lots of Pinus monticola seed from trees 10 to 17 years of age gave an average of 39 per cent germination. Two lots from 21 and 26-year-old trees averaged 55 per cent. Seeds collected in large quantities from trees 60 years and over and machine graded to remove hollow and light seed, averaged 54.5 per cent germination.

(Reviewed by Roy G. Pierce)

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SUCCESSFUL BLISTER RUST MEETING IN NORTH EGREMONT, MASSACHUSETTS  
G. S. Doore, Mass.

Last night (February 3) we had a real blister rust meeting with the men's club in North Egremont. Twenty-three were present. Once again we put the negative question - How many have never heard of blister rust? Not a single hand came up. Everyone had heard about the disease. One man said "How could we help it with the display at Lake Pleasant, those at the fair, and the newspaper articles." At the close of the meeting the chairman remarked, "We never heard a talk on the rust before and I believe everyone present will take a keener interest in the continued control of this disease."

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The early dropping of Ribes leaves may have an influence on the life of the plant, the length of the Ribes eradication season, the thoroughness of Ribes eradication work and the amount of pine infection.

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March, 1933

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THE BLISTER RUST NEWS

Issued by the Division of Blister Rust Control  
and the Cooperating States

CONTENTS

	Page
A Preeradication Survey .....	38
A Vermont Study Plot .....	49
Blister Rust Activities in District 9, St. Lawrence County, N. Y. ....	51
Blister Rust Control as News .....	50
Blister Rust Situation in Michigan .....	39
Bureau of Plant Quarantine Finds White Pine More Suitable for Shipping Containers than Fibreboard Cartons.....	42
"Calendar of Activities " Used in Massachusetts .....	53
Cooperation in Maine .....	46
Dr. Hirt Replies to Agent Boomer's Query Concerning Relationship Between Tree Growth and Growth of Blister Rust Cankers .....	45
Extracts from 1932 Annual Report for Massachusetts .....	47
Interstate Park, Wisconsin, Shows Effectiveness of Blister Rust Control .....	42
Large Forest Tract in the Adirondacks Given to the New York State College of Forestry for Preserve .....	53
Notice to Agents .....	44
Owners Appreciate Blister Rust Control Service .....	54
Phenological Data .....	46
Publications .....	54
Some Notes on Dormant Ribes Eradication .....	40
Tractor Equipment for Ribes Eradication .....	43
Transportation Costs .....	52
White Pine Plentiful in Essex County, Massachusetts .....	54
Winter Work in Warren County, New York .....	49

U. S. Department of Agriculture  
Bureau of Plant Industry  
Division of Blister Rust Control  
Washington, D. C.

A PREERADICATION SURVEY

L. E. Newman, N. H.

In the September, 1932, issue of the "News", the writer submitted a progress report on the mapping and scouting project which at that time was well under way in some 30 New Hampshire towns. Although he volunteered to write further when the project had been completed, the matter escaped his mind until recently, when Editor Wright sent a "memory jogger". Although the project is one about which much might be written, in forbearance to my readers and in the interest of economy, an attempt at brevity will be exercised.

Since copies of the "Scout Manual" were sent to all of the State Leaders it has been assumed that the methods employed are more or less clear, and therefore no description of details will be given. District agents interested in the methods used can, no doubt, obtain from their State Leader a copy of this manual. This project was carried on in towns where the status of control indicated that three years or more would be required to complete the initial program. In some towns, where the allotment was greater, two scouts were employed, but as a rule only one man was assigned to a town. The following summarizes the results of the project:

Mapping and Scouting Project

Acres Eradicated by Scout	Number of Ribes Destroyed	Acres Eliminated Insufficient Pine	Acres of Future Work	Acres Mapped but not Scouted	Total Acres Mapped or Scouted
54,828	41,878	14,240	16,699	17,947	103.714

Attention is invited to the fact that on the 54,828 acres mapped and eradicated of Ribes by the scout, only 41,878 Ribes were found. This is an average of less than one to the acre, and therefore it is quite obvious that to have worked these areas by a crew would have been uneconomical indeed, especially so when the cost would likely enough have run from 25 to 50 cents per acre. The average expenditure for mapping and eradicating Ribes on this acreage was but 6.7 cents per acre.

In a few towns the mapping was carried on too early, or extended too late in the fall to permit effective scouting for Ribes, and this fact accounts for the 17,947 acres which were mapped, but not scouted. However, the matter of locating the Ribes in these unscouted areas will be greatly simplified since we now possess a detailed map. Of the total acreage completed, i.e. mapped and scouted, namely 85,767 acres, the scouts eradicated 63.93%; eliminated on account of insufficient pine, 16.60%; and found that only 19.47% of the areas required crew work.

Attention is called to the fact that this preeradication survey is not a new thing in New Hampshire, since advance scouting and mapping has been conducted more or less in each district although not always following a uniform system until 1932. The experiences of the past season have taught us much in the way of improving this system, and we plan before another summer to make certain desirable changes in the manual. We believe that this project so commends itself that our only regret is that it was not inaugurated in the earliest days of blister rust control.

BLISTER RUST SITUATION IN MICHIGAN

J. E. Kroeber and R. I. Thompson

Upper Peninsula

Blister rust has been found on white pine in Five Upper Peninsula Counties. Besides these five, infection has been found on Ribes in six other counties, making a total of 11 out of the 15 Upper Peninsula Counties in which blister rust has been found on one or both of the host plants. The disease on pine occurs in the center of the Peninsula. The more pronounced evidence of the disease is located near Ishpeming in Marquette County and Ralph in Dickinson County. In sample plots in each place, as high as 75% of the trees have been found infected with as many as 35% of the younger trees killed. The damage stage of blister rust in the Upper Peninsula has been reached; only adequate control measures can keep it in check. Sufficient scouting in the Peninsula has not been done to ascertain disease conditions in every county, but it is almost safe to say that all Upper Peninsula counties contain infection at least on Ribes.

The bulk of local control work in 1932 was done in Marquette and Delta Counties where unemployed labor was used. One park was also protected in Menominee County. Marquette County supplied 30 men and one foreman for a period of six weeks, and Delta County gave work to a crew of from four to eight men for three and one-half months. Also, seven Upper Peninsula counties have been freed of the black currant menace.

A new demonstration area near Negaunee, named the "Teal Lake Area" has been established. This plot, which is one acre in size, contains white pines ranging from seedlings to trees 10" D.B.H. A preliminary survey of this plot shows that about 75% of the trees are infected and many are already dead. Lack of time has prevented developing this area this year.

Lower Peninsula

Since the year 1916 when blister rust was first noted in a nursery in Oakland County, the disease on white pine has gradually spread until now it is known to exist in five different counties in the Lower Peninsula, and all of these infections are within close distance of Lake Michigan and Lake Huron. They are local in character and found on one to several trees.

Condition of infection on Ribes is different. The disease has been reported in all but twelve counties north of a line between Saginaw Bay and Muskegon. It is probable that intense scouting in those 12 counties would disclose infected Ribes; in fact, we found Ribes infected in five new counties during the season of 1932.

During the season of 1932 we worked on 58 jobs in 17 different counties. In the initial eradication, 2,998 acres of white pine were protected. The Ribes found were light in number and scattered. Black currant eradication was carried on in four different counties, namely, Midland, Charlevoix, Mason and Benzie.

SOME NOTES ON DORMANT RIBES ERADICATION

John W. Charlton, N. Y.

For some little time there has been an interest in the possibilities of "out of season" or dormant Ribes eradication. Some experimenting has been done. The following remarks and data concern some work done along this line this past fall in Fulton and Montgomery Counties, New York.

Work done a year ago demonstrated the possibility of this type of eradication, but left considerable doubt as to the practicability. Among the lessons learned in the preliminary experiments were the necessity of quickly recognizing the Ribes, not only as to genus but also as to species, and the absolute necessity of a thorough knowledge of associated shrubs which might easily be confused with Ribes from their superficial appearances and characteristics. All in all, the work of a year ago seemed to justify further experimenting. Accordingly, one of our State checkers, McCloskey, was so detailed after he had finished his checking at the close of the past season. He started the middle of October and worked at this scout eradication until the latter part of November when the frozen ground prevented the clean pulling of the roots.

The objective of this work was two-fold; first, to determine the possibility of the efficient eradication of dormant Ribes, and next, to determine to what extent work is practical. As a preliminary step, McCloskey was familiarized for a week with the pine survey methods and mapping work by assisting mapper C. E. Grant. This experience was to aid him in mapping his own work when and where pine survey sheets were not available, and to aid him in plotting and designating such information as was needed, or of use on the maps of his work. Next, by means of keys and field instruction, he was thoroughly familiarized in recognizing Ribes, and such associated species as might easily prove confusing, by their bud, stem, and habit characteristics. These keys and the field instructions were designed to bring out both the similarities and the differences of the various species involved. It might be interesting to note in passing that we anticipated some of our easiest sailing with gooseberries, but we found them quite otherwise.

When this preliminary preparation was completed, areas were selected to work on and the work laid out much as it is in the summer, both "open" and "closed" scouting methods being used. A record was carefully kept of not only the species and number of the Ribes destroyed, but also of height and estimated leaf-bearing stem. This latter ran up the expense slightly but it was thought desirable to have this information for checking purposes.

Work was done on a number of different areas, totaling some 656 acres. These areas were varied as to pine, Ribes, and environmental conditions. Both natural and plantation pine were included, as well as initial and reeradication work. Of this work, 502 acres were initially done. On this land 1,063 Ribes having some 12,210 feet of leaf-bearing stem were destroyed. This represents 2.1 Ribes per acre and 24.3 feet of leaf-bearing stem per acre. Additional work will have to be done with a crew on a number of limited portions

of these areas where concentrations of Ribes exist. These portions were indicated on the maps for crew work. Recommendations for crew size and time allotments were made. In addition to this, reeradication work was done on 154 acres where initially 1,668 Ribes had been destroyed. In the reworking, 843 Ribes with approximately 6,300 feet of leaf-bearing stem were destroyed. This represents 5.4 Ribes and 40.9 feet of leaf-bearing stem per acre. The Ribes destroyed were gooseberries, red currants, and wild black currants. Skunk currants were not found on the areas worked, but were easily recognized on other areas. The following Ribes summary may be of interest:

Wild Ribes Species	Initial Erad.- 502 Acres			Reeradication-154 Acres			Total Erad.- 656 Acres		
	No.	Total ft.	Aver. ft.	No.	Total ft.	Aver. ft.	No.	Total ft.	Aver. ft.
	L.B.S.	L.B.S.	L.B.S.	L.B.S.	L.B.S.	L.B.S.	L.B.S.	L.B.S.	L.B.S.
Gooseberries	747	6605	8.8	556	2294 1/2	4.1	1303	8899 1/2	6.8
Red currants	95	635	6.6	82	333	4.0	177	968	5.4
Black currants	221	4970 1/2	22.5	205	3672	17.9	426	8642 1/2	20.3
Totals	1063	12210 1/2	11.3	843	6299 1/2	7.4	1906	18510	9.7

In addition to the above, 13 cultivated red currants were destroyed.

As has been indicated, these areas were all mapped and such data as would be useful, kept. The maps used had a four inch to the mile scale, and the customary colors and symbols for forest cover, pine, fences, buildings, waterways, roads, and other data. In the case of a completed area, a pencil line was used to indicate the extent of the boundaries worked, and blue pencil dots to indicate where any considerable number of Ribes had been destroyed. In instances where concentrations demanded crew work, they were indicated by black pencil hatching and were accompanied by descriptive notes as to their nature and needs.

In one case the owner of an area volunteered his own and his hired man's help. This was accepted and although cold weather set in and froze the ground so that work had to be discontinued, still the results were interesting. These two men made up a two-man crew for half a day, and then the owner worked a few hours longer. Neither had had any previous experience with Ribes eradication. McCloskey worked between them and very soon they were spotting the Ribes quite readily. McCloskey later rechecked this area and found quite a few missed bushes. This particular area contained 13 acres and the following wild Ribes were found on it: 243 gooseberries, 13 red currants, and 57 black currants. The gooseberries had  $4,254\frac{1}{2}$  feet of leaf-bearing stem, the red currants  $31\frac{1}{2}$  feet, and the black currants 922 feet, making a total of 5,203 feet of leaf-bearing stem. The averages were 24 Ribes per acre and 16.6 feet of leaf-bearing stem per Ribes, or 400.6 feet of leaf-bearing stem per acre. The costs thus far are foreman's wages, \$6.50, and crew help, \$4.00. There is some "overhead" yet to be added. An additional border will also be needed on this area when the ground thaws out.

General wage costs of the eradication work on the basis of the 656 acres, are \$119.90, or 18.2 cents per acre. This does not include certain "overhead" to be added and also some crew work needed on certain portions of a few areas.

It is, of course, too soon to determine the quality of this eradication work. It will be carefully checked as soon as leaf conditions permit. Likewise it is too soon to draw too many conclusions as to the value of this work, as its value will so largely depend upon the quality. These notes are offered merely to state what has thus far been done.

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INTERSTATE PARK, WISCONSIN, SHOWS EFFECTIVENESS OF BLISTER RUST CONTROL

T. F. Kouba, Wis.

One evidence of the certainty of blister rust control is in Interstate Park in Polk County, Wisconsin, the first county in the State in which blister rust was discovered. The rust was found in this county in 1915 and was present in the vicinity of the Park in 1916. Ribes eradication was carried on in Interstate Park in 1917 and 1920, and reeradication work was performed in 1931. A plot was laid out in the Park in the midst of a stand of young white pine growth to determine the effectiveness of control. A recent study on this plot showed that 99½ percent of the young pines were free from blister rust.

In contrast to the result shown by a study of the above area, a pine woodlot was examined belonging to Mr. Erick Saastad in Barron County, which adjoins Polk County on the east. No protective measures had been applied in Mr. Saastad's woodlot before 1931. The data secured showed that only 52 percent of the pine reproduction was free from the disease, while in some portions of the woodlot this undoubtedly ran as low as 15 percent. At the rate at which the healthy pines were succumbing, within a few years the entire stand might have been completely destroyed if preventive measures had not been applied.

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BUREAU OF PLANT QUARANTINE FINDS WHITE PINE MORE SUITABLE FOR  
SHIPPING CONTAINERS THAN FIBREBOARD CARTONS

C. C. Perry, Mass.

The February number of the Bureau of Plant Quarantine NEWS letter contains the information "corrugated paper cartons have not proved satisfactory as containers of traps shipped by freight to distant points or trucked to trapping sites outside the regulated zone. Their flexibility permits breakage of the traps and the cases themselves as a rule are useful only one season." It has been decided to discontinue the use of the fibreboard cartons, and an order has been recently placed "for a wooden container of white pine made of well seasoned 1/2 inch lumber dressed on one side and free from loose or unsound knots and shakes." The contract calls for a supply of "4,700 packing boxes 22 3/4 inches long, 15 1/4 inches wide; and 23 3/4 inches deep, inside measurements. Bids received by the Division of Purchase Sales and Traffic, ranged from 48¢ - 78¢ per box."

White pine again proves its worth.

TRACTOR EQUIPMENT FOR RIBES ERADICATION

John F. Breakey, Western Office

A new principle of Ribes control was hatched by C. H. Johnson, Blister Rust Control Leader for Montana, a few years ago when he evolved the idea of broadcast brush elimination in stream type areas to be followed with the establishment of heavy sods of forage grasses or other suitable forms of vegetation. His theory has been that two things can not occupy the same space at the same time and therefore wholesale reestablishment of Ribes and other brush forms would be prevented by establishing the competitive growth. The Paul Bunyan Dreams of Hiram met many adversities, but he persisted in this herculean task. He tried chemicals, hand pulling, grubbing, slashing and burning, and bulldozing with varying degrees of success. This initial test of the bulldozer in 1931 turned the tide of thought with respect to the possibilities of this method in his favor, and in the summer of 1932 the western organization went into a huddle and sent the first track-laying tractor into the field equipped with a digging apparatus for tearing Ribes and surrounding brush from its moorings in Mother Earth and piling them in large piles for later burning.

Tractors with bulldozer attachments have been used for constructing motor ways on national forests for several years. The efficiency of these machines had been so thoroughly demonstrated on road work that two of them were given preliminary tests late in 1931 to determine whether or not they could be used for removal of brush and Ribes in the moist stream bottoms of north Idaho and western Montana. As the wide stream bottoms in these regions contain Ribes inerme growing en masse and as this species is very resistant to chemical sprays, any proposed mechanical device for its wholesale removal was given special consideration.

The tractor is equipped for building roads as follows: A U-frame is attached to the tractor. The U-frame fits snugly about the tractor, completely inclosing the front and sides. The open ends of the "U" are attached on opposite sides of the tractor, to the ends of a steel supporting shaft, the supporting shaft acting as a fulcrum for raising and lowering the blade. The blade is fastened to the front of the U-frame just ahead of the radiator. It is 8 feet long, about 32 inches high, and is similar in shape to approximately a fifth longitudinal segment of a 6-foot cylinder, with the concave side facing forward. The blade is lowered and raised through an arc of 36 inches by a hydraulic lift at the rear of the tractor. The driver has finger tip control of all movements of the machine, as all controls are motor driven. This machine is used extensively on side-hill road building where the "cast over" system of dirt movement is employed.

Following tests of the machine in stream bottoms a special digging device was made to replace the regular dirt blade. This new digger has ten teeth that run below the ground to tear out brush and a rack above the teeth to support loose tops. U-bolts are used to fasten the teeth to the push bar. The teeth are set at an angle of 50 degrees to the plane on which the machine travels. This slope allows the brush to work up on the rack as the machine advances forward. The depth of the digger is controlled from the driver's seat and can be varied as the machine moves forward or backward over rough ground.

The method used in clearing a block of stream bottom is to advance the machine forward, pushing all of the brush ahead of it until a point near the center of an area is reached. The machine is then backed up to the original starting point and another swath is taken. This continues until the entire block has been covered. When the area is complete a pile of brush extends the entire length of the block. Of course the brush must be pushed away from standing timber as a precaution against fire and down timber or standing "snags" must be cut and made ready for handling by the machine. Surplus water must be drained off prior to working. There are a host of details to be attended to by a small ground crew before the actual working of the area by machine takes place. The brush piles are allowed to dry thoroughly before burning.

The tractor was used on two areas, totalling 72 acres, during the 1932 season, one at Clarkia, Idaho, on the St. Maries River where brush conditions were bad and the ground was wet and spongy, and the other at Honeysuckle Ranger Station, North Fork of the Coeur d'Alene River, Coeur d'Alene National Forest, where brush conditions were bad, but the ground was more firm. The area at Clarkia, Idaho, has already been planted to grass. The area at Honeysuckle Ranger Station will be planted during the coming season. Both areas will be utilized for pasture.

These wide stream bottoms so frequently covered with a mixture of dense brush and Ribes inerme bushes are, as a rule, flanked by good stands of white pine. Their total area, although scattered throughout the entire western white pine forests, is very small in comparison to the total acreage of white pine, yet the influence of these areas as infection spreaders will be severe. Relative humidity is always high and air currents are favorable for spore distribution. The tractor clean-up of brush and Ribes offers a means of destroying Ribes on these areas.

Changes recommended for the machine used in 1932 are: Set the digging teeth on an open frame to allow the excess dirt to fall away, provide a mechanical shaker for freeing the roots as the machine moves forward, and supply wider tracks for work in swampy ground.

Powered by a 5-horse power motor and weighing ten tons, this machine handles logs and brush with ease. If this mechanical giant can be converted into an efficient Ribes eradication weapon the western organization will be much better enabled to solve a very difficult Ribes eradication problem.

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#### NOTICE TO AGENTS

The latest revision of Farmers' Bulletin 1398, "Currants and Gooseberries: Their Culture and Relation to White Pine Blister Rust" has just come from press, and a copy is being sent to each of the personnel. This bulletin should be quite useful in connection with our work. Those desiring a supply please advise us and we will be glad to secure them for you.

H.T.W.

DR. HIRT REPLIES TO AGENT BOOMER'S QUERY CONCERNING RELATIONSHIP  
BETWEEN TREE GROWTH AND GROWTH OF BLISTER RUST CANKERS.

In answer to Agent S. H. Boomer's article on "Blister Rust Cankers and Tree Growth", which appeared in the February issue of the Blister Rust News, Dr. Ray R. Hirt of the New York State College of Forestry at Syracuse, furnishes the following information:

Several investigators working with parasitic fungi, and more especially with rust fungi, have concluded that there is a relationship between the vigor of the host and the susceptibility to attack by disease-causing organisms. Raines (2) states that the vegetative vigor of the host and the virulence of the disease (cereal rusts) may be in direct relation. Stakman (4) also working with cereal rusts, concluded that the vigorous development of the host was ordinarily conducive to a vigorous development of the parasite. Arthur (1) concluded that generally the vigor of the parasite is in direct proportion to the vigor of the host. To what extent these conclusions may be applied to Cronartium ribicola and its hosts is still problematical. So far as I am aware, no systematic studies have been made to determine this relationship. However, Dr. Spaulding has recorded some very interesting observations.

Spaulding (3) states that "Cronartium ribicola is an obligate parasite, and it appears that the well being of the host pine is essential for the best development of the parasite." He further points out that observations indicate that trees in chronic poor health are rarely attacked by blister rust even in the midst of heavily infected pines. He also indicates that apparently the most aggressive cases of blister rust are on trees which, prior to attack, had made the best growth.

My own work has been almost wholly with young plantation stock 3 to 8 years of age, in which there was little if any difference in vigor between the individual trees at the time of inoculation. From 1927 to 1932 the uninfected trees in this plantation showed a considerable difference in annual height growth. So far as I have observed the infected trees with stem cankers showed a similar difference but with no more pronounced annual growth than did the uninfected trees. Hence I would conclude from my own observations that these stem cankers did not stimulate height growth to any appreciable extent.

It will also be noted that Spaulding indicated that the most aggressive cases of blister rust were on trees which had made best growth prior to infection. It hardly seems reasonable that a trunk canker in the process of girdling a tree would stimulate the apical meristem to more vigorous activity than would occur in the normal stem.

As to whether a fast-growing tree succumbs to blister rust more readily than a slow-growing tree similarly infected, I can only cite the following: For several years I have been observing a number of young trees (now 3 years old) with severe stem cankers which are still alive and growing vigorously, while some of the less-vigorous, neighboring trees with stem cankers died a year or more ago. Let me add that some of the less-vigorous trees with stem cankers are also still alive.

I would suggest to Mr. Boomer that in the plantation to which he refers, a count of the healthy trees could be made and a percentage figure secured for the healthy trees showing exceptionally vigorous growth. A similar count could then be made of the trees with stem cankers and a percentage figure secured for those which showed exceptionally vigorous growth. A comparison of these figures might give some interesting and instructive information.

I am of the opinion that we must be careful to not draw conclusions from random observations, for it is the unusual condition which attracts our attention, and remains fixed in our minds, and which may lead to erroneous conclusions and statements.

1. Arthur, J. C. - Problems in the study of plant rusts. Bull. Torr. Bot. Club. 30:1-18. 1903.
2. Raines, M. A. - Vegetative vigor of the host as a factor influencing susceptibility and resistance to certain rust diseases of the higher plants. Amer. Jour. Bot. 9:215-235. 1932.
3. Spaulding, P. - White-pine blister rust: a comparison of European with North American conditions. Tech. Bul. 87, U.S.D.A., p. 34-36. 1929.
4. Stakman, E. C. - A Study in cereal rusts; physiological races. Minn. Agr. Exp. Sta. Bull. 138. 1-56. 1914.

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#### COOPERATION IN MAINE

W. O. Frost, Me.

For the period 1922-1932, one hundred and seventy towns in Maine have raised money for blister rust control work. These are listed below:

<u>County</u>	<u>No. of Towns</u>	<u>County</u>	<u>No. of Towns</u>
Penobscot	1	Oxford	32
Handcock	2	Somerset	15
Lincoln	11	Kennebec	15
Androscoggin	14	York	26
Sagadahoc	5	Knox	2
Cumberland	25	Waldo	8
Franklin	14	Total	170

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#### PHENOLOGICAL DATA

Mr. Roy G. Pierce reports that on March 9 in the District of Columbia, the yellow flowering currant, the cultivated gooseberry, and the cultivated red currant were beginning to leaf out. The leaves ranged from 1/4 to 1/2 inch in diameter.

Mr. Detwiler reports on March 15 that the first leaves were forming on American black currants in Clarendon, Virginia.

EXTRACTS FROM 1932 ANNUAL REPORT FOR MASSACHUSETTS

Infection on Ribes

Cool and dry weather in May indicated unfavorable conditions for the spread of the rust to local Ribes, but by the last two weeks in June in spite of these conditions, there was an abundant development of uredinia. During July, excess temperatures and deficiency in precipitation resulted in near-drouth conditions, especially east of Worcester County, and yet infection on Ribes continued to be serious. In August, black currants were particularly heavily diseased, and infection continued in evidence on wild Ribes as well. The first evidence of uredinia was noted in Middleboro on May 23, and telial columns appeared in the same town on June 14.

New Infection Areas Located

New and sizeable infection areas were located in all the districts, with the exception of District VIII (Hampden and Hampshire Counties). In North Andover (Essex County), a small but interesting area was located by Agent Roop in a section where no control work was performed at the time of initial work in 1925. This particular area was definitely associated with a patch of cultivated Ribes including specimens of *R. nigrum*. The area contained infected trees of all sizes. In the town of Middleboro, an area of rather general infection was found on the Ashley Estate. Recurring wild Ribes in this area were responsible for an appreciable continuance of spread. In Block No. 8 in the town of Princeton, Agent Clave encountered an area of rather heavy infection. This particular area was one never protected on account of the lack of cooperative interest. A change of ownership took place in 1931, and the infection was noted this year in carrying on control work. The majority of the cankers in this particular case are of recent origin. In Sheffield, in southern Berkshire County, several areas of infection, notably the Bartholomew Lot (Block No. 31) were noted. The cankers in this particular area are not of recent origin, many old lesions being evident as well as branch infections, many of which developed just about the time of the initial control work in the locality.

The Prevalence of Recent Infection

There is ample evidence of the development of recent infections. The degree of development naturally varies in different districts. In Essex County, for example, only a single new canker was noted in the town of Boxford where initial work was performed in 1922. In the southeastern Massachusetts district occasional newly infected pines were found in Marion, Middleboro, and Rochester. In District VIII the only report of new infection comes from Blandford, where sprouts from stone-wall gooseberry bushes had continued to "pepper" nearby planted pines. Evidence of reinfection in southern Berkshire County is quite common.

Informational and Service Activities

No radical changes were made during 1932 in our plan for carrying on informational and service activities. As heretofore, our tendency has been to rely more particularly upon window, fair, and roadside displays; form letters;

reminder cards; personal letters to former cooperators; and interviews. The only innovation was a practice adopted by Agent Doore, to send a series of Federal publications and sample mounts of Ribes leaves to public libraries and high school principals during the month of April. Fourteen complete sets of this material were distributed.

#### Initial Control Work

Initial control work in Massachusetts is virtually complete. Each year, however, we find a few areas that were not covered during the initial program on account of the inability of the owner to make the needed expenditure, or areas where because of competition by associated hardwoods it was questionable at the time whether the pine would survive the competition. Some of the latter areas now show a sufficient survival of pine and, therefore, a sizeable area in this category was covered in 1932. In addition, there was a large area in the town of Barre that had never been examined initially. This was covered this year. We also received three requests for initial work from owners in townships that had been entirely eliminated in our program, either because of the absence of pine, or because of their residential character. In the State as a whole, 48 individuals cooperated in initial control work. A total area of 13,584 acres was examined initially, and 106,577 wild Ribes cleared from these lands. It was also necessary to condemn and remove 967 cultivated Ribes. This initial control work was accomplished at an average total cost per acre of 24¢.

#### Reeradication

Approximately 70% of the field work of the year related to the reexamination of control areas previously cleared of Ribes. No new methods of conducting such control work were pursued. The elapsed time since the initial work had been performed varied from a maximum of 14 years to a minimum of five years, with an average of possibly eight years. Recurring Ribes (seedlings) were found in all towns, varying in abundance, of course, with local conditions. No difficulty was encountered in securing cooperation in reeradication, except in cases where owners could not afford to make the expenditure because of depleted incomes. Agent Roop comments: "Our contact with our old cooperators was very favorable. We were greeted as old friends returned. The doubting disbelievers previously encountered had practically vanished. In short, opposition to blister rust work seems to have completely broken down." There were 752 individuals who cooperated in reeradication work. Ribes were cleared from 148,022 acres of land. These searches revealed 227,776 wild Ribes and 2,104 cultivated bushes. The average cost of reeradication work was 9¢ per acre.

#### Black Currant Eradication

In the special control project involving the complete elimination of the European black currant, the canvass was continued into 31 more townships where 33,599 properties were inspected. Black currants numbering 2,147 plants were found at 386 locations. There were 239 individual owners who cooperated by disposing of their bushes unaided by our men.

WINTER WORK IN WARREN COUNTY, NEW YORK

E. G. Woodward, N.Y.

The fall of snow during the past winter has been very light here in District 6, Warren County, New York, and for that reason it has been a good season to carry on field work on various projects. The early part of the winter I inspected white pine plantations with Assistant Agent W. S. Codman, and since the holiday season Agent N. H. Harpp and I have been making a white pine classification map of the town of Caldwell by road blocks, enlarged from U.S.G.S. sheets to four inches to the mile. In doing this classification work we have found places which several years ago had no noticeable pine reproduction but which today have good stands one foot or more in height. We also noticed while working with these road blocks, a large part of which had been worked for Ribes, that there were a very small number of blister rust cankers which had developed since the initial eradication. Checking for blister rust infections has been started on land where eradication work was carried on several years ago. This is being done to determine the necessity of reeradication this coming season, and also with the idea of finding out what has happened before and since eradication.

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A VERMONT STUDY PLOT

F. H. Rose, Vt.

During the winter months a number of study plots showing the effectiveness of control measures have been established in Vermont. The following data shows the results of one of these studies:

The Peter Salmon Study Plot #4, consisting of one-half acre on a small and rather dry plateau, was worked in 1925 and approximately 10 Ribes per acre destroyed. On this area there are 307 trees ranging from 2 to 40 feet in height. The majority, however, are under 20 feet. The number of infections on this plot according to years is given below:

1914.....	1	1924.....	6
1915.....	1	1925.....	0
1916.....	0	1926.....	0
1917.....	2	1927.....	0
1918.....	2	1928.....	0
1919.....	21	1929.....	0
1920.....	16	1930.....	0
1921.....	22	1931.....	0
1922.....	24	1932.....	0
1923.....	10		

The total number of trees infected was 50, while the number of infections reached 105. The figures show that these fifty trees became infected in the eleven year period from 1914 to 1924, inclusive, while no infections were found for the eight-year period 1925 to 1932, or since eradication took place.

BLISTER RUST CONTROL AS NEWS

G. S. Doore, Mass.

Plain facts concerning the white pine blister rust and method of control still make acceptable newspaper material. Our subject is not one to make the front page as a rule. When it can be tied in with a talk before a public meeting, organization or club our oft repeated story with some new side lights on the subject are more apt to receive favorable attention from a reporter and the news editor.

The recent publicity given a talk on the rust before the Lee Rotary Club luncheon illustrates the point. A brief item announced the speaker and subject February 11, a few days before the meeting. A reporter covered the meeting on the 14th. The following day the Berkshire Eagle, at Pittsfield, a daily, ran six column inches on the rust. The Berkshire Courier, a weekly published at Great Barrington carried the whole story in eighteen column inches on the 16th. The following item, taken from the Daily Republican, a Springfield paper with a very wide circulation, gives the story in brief:

Gives Rotarians Facts on Blister Rust Work.  
Federal Agent Says Fungus Now Imperils  
Pines in 341 Towns in State.

Lee (Mass.), Feb. 15. - Addressing the Lee Rotary Club yesterday, G. Stanley Doore, blister rust control agent employed by the federal government, who covers the Berkshire, Hampshire and Franklin County territory, gave much information concerning blister control work. He brought out that Berkshire County is well infested with the rust which was found in Lee and Lenox before it was located in many other towns of the Commonwealth.

"At the present time," the speaker said, "the rust, which is a parasitic fungus, is in all towns of the Commonwealth except 14. In other words, 341 of the 355 towns are infected by the rust to some extent at least."

The dread of the rust is that it will eventually kill off the pine trees in the State if the control work is not carried on successfully. The elimination of gooseberry and currant bushes is a means of ridding the communities of this pest and through the efforts of Mr. Doore's department much has been accomplished in this line in the three counties under his control. The result is that the people of the district are becoming educated to the dangers of the rust and are cooperating in the elimination work.

"In Lee," Mr. Doore said, "there are 60 pine owners cooperating in holding the disease in check. The majority of the work was accomplished in 1929 and 1928. Most of the owners took an active part in eradicating the currant and gooseberry bushes from their pine areas with the assistance of trained blister workers. Approximately 27,000 wild bushes were found and destroyed on a 5000-acre stretch in and about white pines. Bushes that were too small to be seen in 1928 have now grown and other bushes have sprung

up from seed and they are approaching a point where they are a menace. All pine areas in the town should be reexamined in the near future in order to assure continued control."

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The president and members of the club assured your agent that they would back a reeradication program in the town of Lee. They were especially appreciative of the informational service rendered the club. There were about 30 at the meeting.

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#### BLISTER RUST ACTIVITIES IN DISTRICT 9, ST. LAWRENCE COUNTY, NEW YORK

C. B. Kresge, N. Y.

In St. Lawrence County, New York, the late fall and winter months have been spent in making infection studies of white pine plantations, doing miscellaneous office work both at Albany and headquarters, and planning various educational projects.

The infection studies are valuable in determining the amount of blister rust infection in the plantations of the county. Since 1930, when systematic control work was started in the county, blister rust has been found to a greater or lesser extent in nearly every pine stand examined. However, there was no definite information as to the percentage of infection until the plantation studies were made this fall. As far as possible, the plantations selected were fully stocked, and the trees for the most part were from eight to ten years of age. The percentage of infection in the plantations examined ranged from 1.5 to 6.8 with an average of 3.5. Although this is not a high percentage of infection, it justifies control work all the more, because the time to apply control measures is before serious damage takes place. Moreover, it shows that blister rust infection is generally distributed throughout the county, and offers a serious menace to unprotected pine stands when conditions are particularly favorable to the dissemination and germination of blister rust spores.

Among the educational projects undertaken are talks on blister rust at granges, clubs, and Radio Station WCAD, Canton, New York. This station is owned and operated by St. Lawrence University and undoubtedly reaches an audience within a 75 mile radius, which covers a greater portion of northern New York. Another educational feature underway is the showing of a blister rust movie reel in theaters of the county in conjunction with their regular program.

In preparing for the 1935 control season, plans are being made to eradicate Ribes from two State reforestation areas on which 758,000 white pines are to be planted, and three county areas which will aggregate 170,000 pines. In addition, two State reforestation areas in Jefferson County, on which the exact amount of white pine to be planted has not been determined, will be worked for Ribes.

Control work will start in the four towns of St. Lawrence County in which no initial eradication has been done, and will be extended into Jefferson County as the season advances. Black currant elimination, which has been completed in all but four towns of the county, will be continued as in the past. All indications point to a more successful season this year than in 1932.

TRANSPORTATION COSTS

H. P. Avery

The employees of this Division will probably be interested in the information given below on cost of operating government-owned passenger-carrying automobiles. The report covers the total mileage traveled since this type of transportation was begun on August 5, 1930, to December 31, 1932. We would be glad to receive any comments on this matter which the employees care to make.

Summary of Report of Government-Owned Passenger Carrying-Vehicles  
Covering Period August 5, 1930 to December 31, 1932.

Number of automobiles involved	43
Days used	11,700
Miles traveled	911,615
Gallons of gasoline used	55,859
Quarts of oil used	6,191
Average miles to gallon of gasoline	16.32
Average miles to quart of oil	147.25

Operation, Upkeep and Repairs, and Depreciation

Operation

	<u>Total</u>	<u>Aver. Cost per Mile</u>
Gasoline	\$7,523.65	\$.00825
Oil	1,452.36	.00159
Grease	943.01	.00103
Tolls and washing	755.94	.00083
Transit storage	658.11	.00072
Garage rent	2,885.75	.00317
Tires and tubes	885.26	.00097
Miscellaneous	<u>245.97</u>	<u>.00027</u>
Total operation	\$15,350.05	\$.01684

Upkeep and Repairs

Motor	\$1,327.30	\$.00146
Body and chassis	1,351.39	.00148
Miscellaneous	<u>122.85</u>	<u>.00013</u>
Total	\$2,801.54	\$.00307

Depreciation

Total	\$11,736.25*	\$.01287
Grand total and average	\$29,887.84	\$.0328

\*Depreciation based on allowance received for cars turned in, and on the valuations in the Automobile Blue Book for cars on hand December 31, 1932.

"CALENDAR OF ACTIVITIES" USED IN MASSACHUSETTS

The systematizing of an agent's work is very desirable. Mr. C. C. Perry of Massachusetts has hit upon a plan of charting the agents' activities which seems to be of considerable value. This chart or "calendar of activities", which is used in each administrative district in the State, shows by periods the various types of work which the agent will carry on during the year and lists the places where the work will be performed. An example follows:

<u>District</u>		<u>Nature of Activities by Periods</u>		
		<u>April - October</u>		
		<u>Regular Control</u>	<u>Special Control</u>	
V - VI Worcester  Agent: William Clave	(a) Developing a new system of mapping and map records (b) Checking chemical eradication plots (c) Informational and service work in Dana, Petersham, and towns listed for black currant elimination work (d) Scounting for new infections and studies in old infection areas (e) Office and map record work	Reeradication in the towns of Dana and Petersham during April, May, and June	Black currant location and elimination work beginning July 1 in Auburn, Douglas, Dudley, Grafton, Hopedale, Mendon, Milford, Milbury, Oxford, Shrewsbury, Sutton, Uxbridge, Warren, Webster, and Worcester  Rechecking the environs of the Winchendon Forest Nursery; the Otter River State Forest Nursery, and the Clinton Nursery of the Massachusetts Department of Conservation	

LARGE FOREST TRACT IN THE ADIRONDACKS GIVEN TO THE NEW YORK STATE COLLEGE OF FORESTRY FOR PRESERVE.

Thirteen thousand acres of valuable property in the Central Adirondack Mountains, the largest gift of forest land to an educational institution in the history of the Empire State, has been presented to the New York State College of Forestry, Syracuse University, by Archer Milton Huntington and his wife, Mrs. Anna Hyatt Huntington, of New York City. The property has been deeded to the trustees of Syracuse University who, in turn, have designated the forestry college as the recipient. The forest will be known as the Archer and Anna Huntington Wild Life Forest Station.

The area embraces 14 parcels of Adirondack forest land and lakes, aggregating more than 13,000 acres, located principally in Essex County in townships 27 and 28 and partially in the town of Newcomb.

OWNERS APPRECIATE BLISTER RUST CONTROL SERVICE

R. E. Wheeler, Mass.

During the past field season, it was gratifying to note the cooperative response given by pine owners. In very few cases was the excuse of "depression" given for not extending cooperation.

In fact, pine owners seemed to feel that they were being given something substantial and worth while, and to a certain extent they were receiving actual returns for a portion of their tax burdens. While talking to one influential business man, farmer, and pine owner, he expressed his appreciation of government and State endeavors as follows:

"To my way of thinking government and State workers engaged in assisting land owners in the control of plant diseases and insect pests, are a vital part of government business, and money appropriated for such purposes is a real investment for the government to make. The people as a whole eventually realize actual benefits."

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WHITE PINE PLENTIFUL IN ESSEX COUNTY, MASSACHUSETTS

Essex County, Massachusetts, is ninth in area among the counties of the State, but third in property value and population. Approximately one third of the area is covered with tree growth, one third is farm land and open pasture, and the remainder is residential property, idle land, marshland and water. It has three main types of forests, of which 28 per cent is in white pine, 27 per cent is oak, and 25 per cent is maple and birch, the remainder being mixtures of pine, hemlock and hardwoods.

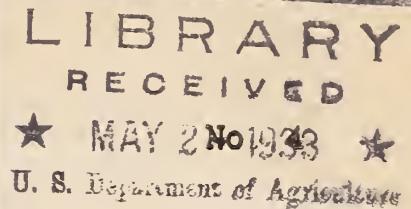
(From the "Boston Evening Transcript", February 4, 1933.)

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PUBLICATIONS

Neff, Philip - Shall We Protect Western White Pine from Blister Rust?  
Journal of Forestry, Vol. XXXI, No. 3, March, 1933, pp. 286-295.

"The blister rust disease threatens to wipe out the 5-needle pines as commercial species. Are they worth the cost of defending them against the disease? The author makes a clear case for western (Idaho) white pine. He finds that its wood has such intrinsic value that in spite of business depressions it commands a good price and has a better market than its associates. Without the white pine many areas of the Inland Empire would not be worth logging and if white pine is not protected to assure its appearance in future stands its place will be taken, not by its nearest market competitor, ponderosa pine, but by the species of much less utility and value such as white fir and hemlock."



April, 1933

## THE BLISTER RUST NEWS

Issued by the Division of Blister Rust Control  
and the Cooperating States

CONTENTS

	Page
Administrative Notes .....	67
Agent Barber Finds Moving Picture Films Helpful .....	65
Amendment to the Administrative Regulations Regarding Sick Leave .....	68
Blister Rust Definitely Checked in Old Infection Area Located at North Easton, Massachusetts .....	56
Control Work in the Southern Appalachian States .....	62
Dietrich Preferable Authority for Cronartium ribicola .....	70
General Restrictions During the Fiscal Year 1934 on Purchase Maintenance, Operation, and Repair of Government-Owned Vehicles .....	67
Growth Variance in White Pine .....	66
Making Good Use of the Press .....	59
New Annual Leave Legislation .....	69
No Salary for Per Diem Employees for Holidays .....	70
Phenological Data .....	70
Planting of White Pine Recommended for Van Buren County, Iowa .....	65
Pruning for Blister Rust Control .....	58
Publications .....	63
The Boston Office Fills in the Breach .....	64
The Role of Cultivated Ribes .....	63
White Pine Among Favored Timber Species for New County Work Farm Forest in Minnesota .....	62
White Pine Blister Rust Control in New York in 1932 .....	60
White Pine Inventory in the Upper Peninsula of Michigan .....	56

U. S. Department of Agriculture  
Bureau of Plant Industry  
Division of Blister Rust Control  
Washington, D. C.

BLISTER RUST DEFINITELY CHECKED IN OLD INFECTION AREA

LOCATED AT NORTH EASTON, MASSACHUSETTS

E. M. Brockway, Mass.

One of the oldest blister rust infection areas in southeastern Massachusetts is located at the Ames Estate in North Easton, Bristol County. The pines were originally planted as a border along the boundary of a large estate, the planting designed primarily to screen the highway. The original white pine stock was imported and some of the trees infected when planted. Further spread of the disease was facilitated by the presence of European black currants and other cultivated Ribes on the estate and on neighboring properties. The black currants were destroyed in 1917, but not until much damage had resulted from their presence. During the 1926 field season, the entire area was cleared of wild and cultivated Ribes in connection with initial control work in the entire township of Easton.

In February of this year, considerable time was spent in making a thorough examination of the remaining pines on this estate, and not a single recent infection could be found. Most of the trees with old cankers have died, and have been removed, and had it not been for an interplanting of spruces, no highway screen would now be in existence. There are a few infected trees that are struggling against time, but will not survive much longer. In fact, there is so little canker activity on the trees now that the area has been given up as a place of demonstration, although it once served a most useful purpose in informing local pine owners regarding the nature and extent of blister rust damage.

WHITE PINE INVENTORY IN THE UPPER PENINSULA OF MICHIGAN

J. K. Kroeber, Mich.

In 1929, when blister rust control was first being seriously undertaken in the Upper Peninsula of Michigan, it remained for us to determine to what extent the disease existed in this region. Scouting parties prior to this time and during the years 1929 and 1930 went over the peninsula in an attempt to determine the status of the rust. It soon became apparent that much time was lost, not in pine scouting, but in scouting for pine areas to be examined. In the Upper Peninsula pine areas are widely scattered and much time can be lost if a stranger to this region attempts to examine pine stands. Our friend, L. W. Hodgkins, who had been with us on several occasions, pointed out this lost motion and suggested that during the winter we make an inventory of our stock. Therefore, beginning in the winter of 1930-31 two of us set out to make the inventory.

The Object was to locate, map and examine for disease all pine areas within each county, locate and map white pine planting sites, and to acquaint all pine owners with our work.

Equipment: A Ford pick-up truck, snow shovel, chains, mattock, axe, rope, snowshoes, and any other tools necessary to facilitate travel over all highways, roads, logging roads and trails in winter.

Procedure: The county was our working unit. Upon arriving in the county (usually establishing ourselves at the county seat), we secured the most up-to-date maps showing the greatest amount of detail. These maps were usually obtained from the county road commissioner. In addition, we procured any other maps, such as Land Economic Survey, Geological Survey, large landowners' maps, etc. For further information we talked with land-lookers, forest rangers, "old timers", etc.

We then set out and went over each area systematically, following out each highway, road, side-road, logging road and trail. As we encountered pine areas, we would map them, examine them for disease, classify them as "worth protecting" or scattered, ask neighbors who owned them, and if the owner was nearby we explained blister rust and gave him blister rust bulletins. Where ownership could not be determined, we would at least get the location down to the "40", and later look up the owner in the County Treasurer's office, or office of the Register of Deeds. To get the location of an area, we took speedometer readings on roads, or measured from landmarks such as roads, lakes, streams, etc. Except where pine areas were large and contiguous, we did not locate section and "40" corners because of limited time.

When we were through in a county, we would have information as follows:

I. Pine Worth Protecting.

No. : Town: Range: Section: Quarter : Acres : Approx. : Owner and: Remarks:  
Section : Pine : Man Days : Address :

At the outset, we listed only location, acres of pine, owner, and remarks, but as we became more acquainted with the work, we were able to guess from past experience the approximate area necessary to work, and approximate number of man days required to protect each area.

II. Scattered Pine. For observation of disease only.

No. : Town : Range : Section : Quarter Section : Acres of Pine : Remarks :

"Scattered pine" included small clumps, trees in swamps, or any other areas not feasible or worth protecting.

III. White Pine Planting Sites.

Located these on the map only.

During the first winter we were fortunate in that the winter was mild with little snow, enabling us to cover most of the areas quite readily. Careful as we were, we did not find and map all existing pine areas, but we did have a good picture of each county worked, and with subsequent visits to various parts of these counties we add any pine areas not already listed, or, similarly, discount any that have been cut or destroyed by fire. To date we have our information only on county maps and typewritten sheets gotten up at the completion of the inventory in each county, but we hope soon to perfect a system of records whereby we can list our information by townships.

During the first winter, seven Upper Peninsula counties were inventoried, the work extending over a period of four months. The following winter - 1932 - also an open winter, eight Lower Peninsula counties were examined and mapped in about three and a half months. So far this winter, which has been a true Upper Michigan winter, we have been able to complete only four and a half counties in nearly three months.

In addition to getting pine information and information on the status of the disease, the inventory gives the agent in charge a good conception of his territory and helps him to choose the counties in which black currant eradication should first be undertaken and those which can be left to the last. Obviously, the agent in charge of the district should be the one heading the inventory crew.

-----

#### PRUNING FOR BLISTER RUST CONTROL

H. Holcomb, N. Y.

Early last fall after the eradication season was over, a little time was spent in removing blister rust branch infections as an experiment in the control of the disease. This work was done in cooperation with the land owner.

The plantation where the work was carried out was situated in the town of Sandy Creek, Oswego County, New York. The trees, planted in an old cultivated field with a southern exposure, were 8 and 10 years old and of an exceptionally vigorous growth. Along the southern border was a mature stand of hardwoods which shaded the area for part of the day. This helped to retain the moisture from heavy dews and rains. The Ribes on this plantation were eradicated in 1932. Those Ribes which caused the greatest percentage of the infections (gooseberries and escaped red currants), were found along the wood-edge in two large patches, very close to the border of the plantation. Directly opposite these patches most of the infections were found in a fan-shaped spread, approximately 12 trees into the area in each row.

While securing data on this pruning work, several measurements were taken on the distance of infection from the stem. The trees were marked where measurements were taken and recorded by row number, and number of tree in row.

The tabulation below is a summary of the data secured:

Total No. Rows Inspected	Total Trees Infected	Total Trees Not Infected	Grand Total Trees	No. Branch Infections	Percent of Infections
109	409	2,344	2,753	1,171	14.8

The tabulation does not give the exact distribution of the infections. However, it does give a picture of the conditions found on the entire area. It might be of interest to mention that several of the trees had over 25 branch infections and no doubt many more that were not visible.

I sincerely believe if this pruning had not been carried out that in five years a serious loss would have resulted in approximately one-half of the area, the section nearest the wood-edge.

## MAKING GOOD USE OF THE PRESS

That Mr. W. O. Frost makes good use of the press is shown by the fact that during the week of March 3-9, articles on blister rust appeared in about 12 Maine papers. These articles, ranging from half a column to over two columns in length, and in most instances well illustrated, pointed out the facts concerning blister rust control, the value of white pine to Maine, what has been accomplished in control work in Maine in the past eight years and the necessity for continuing such work, etc. The use of welfare funds for blister rust control was especially stressed. Extracts from a few of these articles are given below:

Portland Press Herald, March 4:

"One of the most interesting, and at the same time one of the most vital features of the annual report of State Forest Commissioner Neal L. Violette, is the summary of the work done in battling with the white pine blister rust which is menacing the pine growth, particularly in the southern part of the State. This summary, prepared by W. O. Frost, Federal and State inspector in charge of the work, is something which every owner of white pine timber, and town officials should read as it reveals just how great is the danger to the trees, how great an effort is being made to eradicate the rust, through the gathering of bushes which serve as carriers, and how important it is that the fight should be continued to the utmost in order to save many thousands of dollars to property holders. It is interesting to note that Maine leads in the use of unemployment funds on the blister rust control work in 1932, among four Northeastern States. A total of \$7,725.07 was expended on such projects, 115 men being given employment for 18,790 man hours. This work resulted in the eradication of 416,777 Ribes from 18,473 acres. Maine had the greater part in the work, \$4,045 being spent for the hire of 66 men, working 14,000 man-hours and removing 292,364 Ribes from 6,000 acres. Persons not connected with these projects, but realizing their value to the State, believe that they afford an excellent opportunity to relieve to some degree the unemployment situation."

Waterville, Morning Sentinel, March 4:

"Employment of townspeople in blister rust control measures in an effort to stem the destruction of Maine's valuable asset, white pine, is advocated by W. O. Frost. A year ago, programs, in which men who were unemployed were given work during the summer months, were introduced in the various towns of the Kennebec Valley and this practice is to be followed this year. Eight years of blister rust control in Maine has resulted in many young pine growths being given the proper attention and protection so that they will reach maturity. At one time this State led the country in the production of white pine lumber. For nearly 300 years pine has been sawed in Maine, producing an annual cut ranking well with the highest producing States. When towns became unable to raise appropriations for the work, arrangements were made to have town charges clear the pine growths of the currants and this work was carried on successfully both for the timber owners and the community itself."

\* \* \* \*

"While many people think of the lumbering as a thing of the past, records on file at the office of the State Forester in Augusta, show that in 1930 the total cut of pine in Maine was 110,834,000 board feet, or more than 54% of the total Maine harvest for that year. Other lumber cut was spruce 29.9%, hemlock 11.7%, cedar 2.34%, balsam 1.2%, and larch .02%."

WHITE PINE BLISTER RUST CONTROL IN NEW YORK IN 1932 \*

Each year the Conservation Department has given encouraging reports as to the progress of control work. The season of 1932 again witnessed effective eradication work. Beginning May 2 in Ulster County, by the 15th the blister rust control work was in full swing. The season was favorable for eradication. Due somewhat to the dryness of the weather, however, the leaves of the Ribes bushes became defoliated in many parts of the State to such an extent as to necessitate the discontinuance of the work a little earlier than usual. Considerable work was brought to a close the latter part of August, but in other parts of the State eradication work was continued successfully until about September 15. Control work was carried on in 37 counties in the State.

It was at one time thought that heaviest infections were in the Adirondacks, but more recently severe infections have been uncovered in many parts of the State, both on natural stands and plantations and it is generally recognized that no section can feel that it is naturally protected from blister rust. Wherever white pine is grown blister rust may be found and the abundance of Ribes determines largely the extent of infection. The general division of blister rust control projects with a summary of work done follows:

State Reforestation Areas: During the past year, white pines were planted on a number of these areas either in pure stands or in mixture with other species. It has been the practice in the past to destroy all gooseberries and currants around these areas the year the trees are planted, thus giving the young plantation the utmost protection from the start; and the same procedure was followed in 1932. In addition to the customary protective zone, all cultivated black currants within one mile from the plantations are removed. Due to the fact that many of these plantations are located in exposed sites, an extra precaution was added this year by placing a 1,500-foot protective zone around them. This was added at little additional cost and now the reforestation areas are given practically the same protection that the State nurseries receive. The selection of planting sites for white pine by the district foresters has much to do with effective control work at a minimum of cost. This year much care was exercised, thereby bringing about a considerable saving. In these State Reforestation Areas, 19,686 acres were protected and 296,394 Ribes destroyed.

Forest Preserves: This comprises eradication work on State land within the Adirondack and Catskill Parks. The work performed here was on plantations and natural stands of white pine, and in 1932 was mainly confined to the Adirondacks. It is here that white pine is an integral part of the landscape and it is here that blister rust control work has proved its worth beyond the commercial value of a pine stand. During the year, 5,668 acres have been protected and 78,303 Ribes destroyed.

State Nurseries: As in the past, a rigid inspection was made around the State nurseries which grow the millions of young trees for reforestation in the State. A 1,500-foot zone, free of all Ribes, and a one mile zone free of Ribes nigrum, are maintained at all State nurseries. These nurseries

are inspected each year for Ribes and though they are gone over carefully more or less bushes are found. However, the bushes are small, usually having sprung up from seed lying dormant in the ground or carried there by birds or rodents. But in order to prevent them from becoming a menace to the nursery stock, this follow-up policy must be adhered to. The new nursery at Tully in Onondaga County was eradicated for the first time. Less Ribes were found here on the initial eradication than in the other nurseries. In this State nursery protection work, 7,046 Ribes were destroyed and 10,130 acres protected.

State Parks, Public Campsites and Recreation Areas: These areas include State land largely used for recreational purposes. One game refuge is included in the group. The protection of these areas was deemed advisable inasmuch as they were used extensively by the public and because of the protection afforded wild life. Needed protection was given this year to 9,635 acres, and 122,079 Ribes were destroyed.

County Reforestation Areas: The various counties doing reforestation work have always shown marked interest in protecting their white pine from blister rust. They have exercised care in selecting the planting sites with blister rust control work in view, so that the work might be conducted as economically as possible. The protection work accomplished on county areas this year amounted to 94,080 Ribes destroyed and 6,428 acres protected.

Community and Industrial Forest Lands: This group includes land owned by cities, towns, villages, schools, fish and game clubs, power companies, etc. The support of these organizations has always been of the very best. Wherever the necessity arises for assistance to remove Ribes endangering white pine stands belonging to them they have willingly contributed. Here again in many instances the stands of pine have a two-fold value, the esthetic as well as the commercial value. On these lands 11,522 acres have been protected and 107,927 Ribes destroyed.

Private Land: The private owner of white pine represents the largest single project in blister rust protection work. \*\*\*\* During the last year or two, by the introduction of an improvement in scouting methods, the State foremen have been able to eliminate much unnecessary work on the part of the pine owner, thereby adding greatly to the cooperative spirit. This year, despite the depression, more ground has been covered than ever before in any single year, and it is encouraging indeed to record this achievement in view of the fact that so much lies ahead in the way of protection work. In this work, 1,526 private owners cooperated, 615,967 Ribes being destroyed and 103,748 acres protected.

#### Summary of Eradication

Total acres covered .....	166,814
Total Ribes destroyed .....	1,321,796
Total areas worked .....	1,679

WHITE PINE AMONG FAVORED TIMBER SPECIES FOR NEW  
COUNTY WORK FARM FOREST IN MINNESOTA.

Mr. John Fritzen in an article entitled "St. Louis County Work Farm Forest", which appeared in "The Smoke Screen" for February, 1933, gives an interesting account of a new county work farm forest composed of 1,800 acres which is being developed in St. Louis County, Minnesota, 15 miles from Duluth. Mr. Fritzen writes in part as follows:

"Some of the land contains merchantable timber but most of it has been cut over and some of it burned. The timber types favor white pine, spruce, balsam, cedar and mixed hardwoods. At present the crews are engaged in cleaning up the forest. Each year several hundred acres are gone over and all dead and down material is disposed of. Logs, posts and fuelwood are salvaged and the debris is piled and burned. In this way the fire hazard is reduced to a minimum and the land is prepared for planting.

"A nursery was established last year to provide white pine, Norway pine, jack pine and white spruce transplants. These trees will be ready for planting in 1935. Hardwood seedlings will be transplanted from a number of the denser stands. The plan calls for converting the forest to the more valuable types of timber and favoring the types most suited to the land.

"The area has been carefully gone over and all wild currants and gooseberries have been removed. The forest now is protected against blister rust. Since the original timber favored white pine it is likely that white pine will be favored in the plantings."

(Edit: - State Leader L. B. Ritter of Minnesota informs us that about 50 acres of swamp land near the nursery have been initially eradicated of Ribes and approximately fifty thousand bushes removed. He writes: "At the present time there is very little white pine on the forest. Undoubtedly there will be considerable white pine planted and as it is planted we will try to take care of the blister rust control work necessary to protect it. No blister rust is known to be present on the forest, though it has been found in several other places in the same township.")

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CONTROL WORK IN THE SOUTHERN APPALACHIAN STATES

Mr. Roy G. Pierce in his recent report on cooperative blister rust control work in the Southern Appalachian Region, reports the following work performed in that region in 1932:

In control work on five State and Federal forest nurseries, 2,645 Ribes were destroyed and 6,739 acres scouted. Three of these nurseries, located in Maryland, Virginia and West Virginia, accounted for 6,030 acres, while but 21 Ribes were found. In control work outside of nurseries, 36,273 Ribes were removed from 2,045 acres at a total cost of \$140.30 or 0.067 cents per acre.

An extensive preeradication survey was also carried on in the States of Maryland, Virginia and West Virginia, a total of 1,922 acres being surveyed. Of this acreage, 1,799 acres were eliminated by the scout on account of the absence of Ribes.

THE ROLE OF CULTIVATED RIBES  
E. M. Brockway, Massachusetts

There has been some uncertainty at times in the minds of the field worker, as to just how much blister rust damage can be attributed to cultivated Ribes. Usually wild Ribes are so intimately associated with cultivated Ribes that it is not possible to say definitely what part if any the cultivated bushes may have played in the situation. It is helpful, therefore, to be able to point out definite instances where, through the complete absence of wild Ribes, damage can be certainly attributed to cultivated Ribes. Such another instance came to my attention not long since in the town of Weymouth in Norfolk County, Massachusetts.

I have had occasion to speak before the class in agriculture at the Weymouth High School at the request of the school authorities, and following one such occasion I was requested by the instructor to inspect an ailing ornamental white pine on the property of a neighbor. This I was glad to do. A casual examination of the tree seemed to indicate that the trouble was at least associated with a heavy infestation of pine bark aphids. Upon further examination, however, it was noted that a blister rust canker was present at a point about 30 feet on the tree. This, of course, aroused our curiosity and further search in a nearby grove of ornamental pines disclosed not less than 30 cankers of various ages and sizes. On still another nearby property, several more infections were readily found.

A search of the neighborhood failed to reveal any wild Ribes, but within view of the locations several owners had an array of cultivated Ribes. These Ribes were well within infecting range and distance, and without doubt are responsible for the damage to the pines.

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PUBLICATIONS

Pomerleau, R. - Present status of the white pine blister rust in the province of Quebec. Ann. Rep. Quebec. Soc. Prot. Plants 23/24 (1930/1932): 176-198, illus.

Jackson, A. Bruce - A new hybrid pine. The Gardeners' Chronicle, March 4, 1933. (A cross between Pinus ayacahuite and P. excelsa.) This new hybrid pine is called Pinus Holfordiana, and is described as follows: "A tree similar in habit to P. ayacahuite and P. excelsa, differing chiefly from the latter in the usually hairy shoots, the broader cones and the apophyses which are acute or subacute and not rounded-apiculate at the apex, and from the former in the non-reflexed apices of the cone scales, the smaller seeds and the longer, narrower seed-wing."

Clinton, G. P. - Notes on three serious tree diseases (including blister rust). Ann. Rep. Quebec Soc. Prot. Plants, 23/24 (1930/1932): 13-19, 1932.

Mielke, J. L. - "Tuberculina maxima in Western North America". *Phytopathology*, Vol. 23, No. 3, March, 1933, pages 299-305.

The lilac fungus (Tuberculina maxima Rost.) has long been known as a parasite of white pine blister rust (Cronartium ribicola Dietr.) in Europe, and on that Continent appears to be widely distributed on this host. The paper by Dr. Mielke reports the discovery, distribution and observed behavior of T. maxima upon Cronartium ribicola and C. comptoniae in western North America.

"Tuberculina maxima as a parasite of Cronartium ribicola was first observed by J. S. Boyce of the Division of Forest Pathology, on cankers on western white pine (Pinus monticola D. Don). It was found on August 18, 1926, at Daisy Lake, British Columbia. At this same place T. maxima was found on C. comptoniae for the first time on April 25, 1931, when the writer collected it on cankers caused by this rust on lodgepole pine (P. contorta Loud.). The known distribution of the parasite on C. ribicola is limited to two small areas in British Columbia - one in the coastal and the other in the interior region - and to one locality in northeastern Washington. On C. comptoniae the parasite has been found only at Daisy Lake, B. C., in the coastal region.

"There is no evidence that T. maxima was introduced into this country with the introduction of C. ribicola to western North America. There is evidence, however, that it is indigenous, probably on one or all of its native pitch-pine blister-rust hosts.

"The parasite has never become generally destructive to either C. ribicola or C. comptoniae. It is not considered an important factor in reducing aecial sporulation or in controlling C. ribicola."

- - - -  
THE BOSTON (FEDERAL) OFFICE FILLS IN THE BREACH  
C. C. Perry, Mass.

In preparing a brief for the information of our Legislative Appropriations Committee, I concluded with the following statement:

"The control of the rust is not only a Massachusetts problem. It distinctly concerns all the States in the Northeast. These States are actually engaged in the solution of the problem, and Massachusetts is under a distinct obligation to do its part toward the solution of this regional pest control and forest protection problem."

This statement immediately raised in the mind of one for whom the brief was prepared, a question regarding the extent to which other States were appropriating public funds for this work. A telephone call to Mr. Stimson of the Boston Office, secured the facts, and within ten minutes I was able to supply the desired information.

This illustrates, I believe, one of the many ways in which the Boston office has been able to be of service, particularly in these recent days. In this connection I might also mention the calculations prepared by Mr. Filler relative to the valuation of white pine, and the relation between this valuation and the cost of blister rust control work. These figures, although based upon the cartographical survey, the shortcomings of which we appreciate, have been invaluable in demonstrating how conservative in amount have been the combined local, State and Federal funds which have been expended in the protection of the white pine assets of the Northeast.

AGENT BARBER FINDS MOVING PICTURE FILMS HELPFUL

Agent Philip E. Barber of New York, who early this year secured the loan of some Federal moving picture films, including one on blister rust, informs us that he showed these films at 21 meetings held in Saratoga County, New York. These meetings were held at schools, granges, clubs, etc., the attendance at the various meetings ranging from 40 to 150. Mr. Barber writes:

"At each one of these meetings the four Federal films and other State films were shown. These reels have been very helpful in regard to the blister rust program, and the public seemed very interested in them."

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PLANTING OF WHITE PINE RECOMMENDED FOR VAN BUREN COUNTY, IOWA

The following extracts from the "Van Buren Record" for March 16, a weekly newspaper printed in Van Buren County, Iowa, describes the growth of a test planting of white pines on an eroded slope in the State Park near Keosauqua, Iowa:

It will be of interest to persons considering the use of evergreen or conifer trees to have some further information as to the rates of growth and adaptability on certain of our Van Buren county soils. A few plantings of white pine were made in the early days of the county and trees have continued making an excellent growth and today are outstanding specimens that may be observed in the towns and rural plantings. However, as the soils have become more eroded and in some cases the surface soil almost completely washed away, there has been some question as to whether these trees would make satisfactory growth. Five or six years ago plantings were made in the Keosauqua State Park, in which white pine was used upon one of the slopes, located on the Clinton type soil where most of the surface soil had previously been washed away. Custodian H. E. Rees protected the trees from fire, but other than that the trees grew among the usual growth springing up on such land, consisting of wild grasses and some blue grass. The trees were protected from livestock.

It is a rather surprising and interesting fact that these white pine trees made such remarkable growth, in some cases over two feet per year was made by some trees, but average growth would be about 16 inches, which is excellent growth for the white pine. We are not so far distant from the native area of the white pine as native trees are found as far south as Muscatine, and in the Wildcat Den park of that county the white pine has, in a few cases, reseeded itself and young trees are springing up. We mention this fact as there may be persons who would be situated where they could protect these trees from stock and would like them for windbreak purposes or other manner of plantings. The white pine is one of our good, permanent type conifer trees, and from results observed, may well be more generally used in this county.

Edit: Page the blister rust leader. These pines should be protected from blister rust.

GROWTH VARIANCE IN WHITE PINE

T. P. Woolschlager, N. Y.

I recently obtained several very interesting cross sections of white pine from various parts of Oneida County, New York, through the courtesy of several portable mill operators.

From Mr. Ernest Portner who operates a small mill at Lee, I obtained a very fine section of second-growth white pine 77 years old and measuring 25 inches in diameter, thus making an average of about six growth rings to the inch. The growth throughout this 77 year period was quite steady and even, and when the woodsman swung his ax for the final blow this tree was still a vigorous youngster and making growth rings that averaged 8 or 10 to the inch. The heartwood (although as yet not any too distinctive) measured 20 inches and the sap 5 inches. This section was grown on the sand plains just west of Rome where once grew the choice white pine that went to the New London ship yards only 3 or 4 miles distant, where they were made into boats and barges when the "Old Erie" and the tow-path mule were in their heyday.

The second section is 36 years old and 16 inches in diameter, and shows the extremely rapid growth of second-growth white pine under favorable conditions on the light, sandy soil east of Boonville in northern Oneida County. This section, of course, is all sapwood with very little variance in the width of the growth rings during its 36 years and is what the woodsmen call a sap or pumpkin pine. Growth rings in this section average nearly 1/4 inch per year, or a little more than four to the inch. This section came from the sand plateau east of Boonville and was obtained through the courtesy of Seiter Brothers who operate a small water power mill on Kents Creek.

The third section is an old growth white pine (which antedates by several years the landing of the Pilgrim Fathers in the "Mayflower"); is 317 years old and measures only 18 inches in diameter. This section comes from Sangerfield Swamp in southern Oneida County and of course was grown under very adverse conditions as to soil and light, etc. This section (although all the rings are very close) shows quite distinctively that there were several periods of lean and fat years (depressions) during its life cycle of more than three full centuries. It evidently encountered some rather tough sledding when just a sapling between 20 and 40 years where the growth rings for this 20-year period measure barely 1/4 inch, while the average width of growth rings is 17 per inch for the entire 300 year period. The heartwood on this section measures 16 inches, and is a deep reddish brown in color. The sapwood which measures about one inch, is a rich golden yellow. It was this sort of pine that we often hear the old timers talk about as being yellow, or swamp pine. This section was obtained through the courtesy of Mr. Walter Letts who operates a small mill just south of Sangerfield on Route 12. Mr. Letts owns a tract of some 150 acres in the middle of Sangerfield swamp, and to my knowledge it is the only tract of virgin white pine in central New York. Mr. Letts estimates that he has at least 1,000,000 feet of white pine. I recently spent several hours getting acquainted with some of the old veterans that go to make up part of this stand, some of which will measure 50 or 52 inches on the stump, and rival the old so-called "grandpop" on the Pack Forest near Warrensburg, New York. Mr. Letts has promised me a cartwheel off of one of these old vets as soon as market conditions warrant further cutting.

ADMINISTRATIVE NOTES

GENERAL RESTRICTIONS DURING THE FISCAL YEAR 1934 ON PURCHASE,  
MAINTENANCE, OPERATION, AND REPAIR OF GOVERNMENT-OWNED  
MOTOR-PROPELLED PASSENGER-CARRYING VEHICLES.

(P.B.A. Circular No. 224 - March 23, 1933.)

Section 3 of Title II of the act making appropriations for the Treasury and Post Office Departments for the fiscal year ending June 30, 1934, and for other purposes, reads as follows:

"Sec. 3. No appropriation available for the executive departments and independent establishments of the Government for the fiscal year ending June 30, 1934, whether contained in this Act or any other Act, shall be expended --

(a) to purchase any motor-propelled passenger-carrying vehicle (exclusive of busses, ambulances, and station wagons), at a cost, completely equipped for operation, and including the value of any vehicle exchanged, in excess of \$750, unless otherwise specifically provided for in the appropriation.

(b) For the maintenance, operation, and repair of any Government-owned motor-propelled passenger-carrying vehicle not used exclusively for official purposes; and "official purposes" shall not include the transportation of officers and employees between their domiciles and places of employment, except in cases of medical officers on out-patient medical services and except in cases of officers and employees engaged in field work the character of whose duties makes such transportation necessary and then only as to such latter case when the same is approved by the head of the department or establishment concerned. The limitations of this subsection (b) shall not apply to any motor vehicles for official use of the President, or of the heads of the executive departments.

(c) For the maintenance, upkeep, and repair (exclusive of garage rent, pay of operators, tires, fuel, and lubricants) on any one motor-propelled passenger-carrying vehicle, except busses and ambulances, in excess of one-third of the market price of a new vehicle of the same make and class and in no case in excess of \$400."

It should be noted that subsection (a) does not carry the 10 percent exception as to maximum unit price provided in the 1933 Agricultural Appropriation Act and applicable to that fiscal year; also that subsection (c) decreases from \$500 to \$400 the maximum which may be expended per unit for maintenance, upkeep and repair.

(Sgd.) W. W. Stockberger,  
Director,  
Personnel and Business Administration.

AMENDMENT TO THE ADMINISTRATIVE REGULATIONS REGARDING SICK LEAVE  
(Memorandum No. 633 from Secretary Hyde, dated March 2, 1933.)

Paragraphs Nos. 509 to 520, inclusive, of the Administrative Regulations of the Department, under the heading, "Sick leave", are amended to read as follows:

509. SICK LEAVE. - Grants to officers and employees of the department of the sick leave allowed them by law (see paragraph No. 484, Administrative) shall conform to the following standard sick leave regulations prescribed by the President in Executive Order No. 6021, dated February 9, 1933, and effective on and from that date:

(1) Sick leave with pay may be granted to civilian officers and employees by the executive departments and independent establishments of the Government, within the limits now authorized by law, when in meritorious cases such officers and employees are incapacitated from the performance of their duties by sickness or injury; or when some member of the immediate family is afflicted with a contagious disease and requires the care and attendance of such officer or employee, or when, through exposure to contagious disease, presence at his post of duty would jeopardize the health of others.

(2) The entire amount of sick leave authorized by law may be granted at one time or fractionally. The minimum charge for sick leave shall be one-half day. The period of sick leave that may be granted in any one leave year shall not exceed 30 days, unless a longer period is specifically conferred by law.

(3) Slight illness or indisposition, or absence for the purpose of medical examination, will not be regarded as sufficient reason for the allowance of sick leave. Absence for the purpose of being treated professionally by a dentist or oculist in his office is not allowable as sick leave, but this is not intended to disallow sick leave for detention at home or hospital by illness or disability due to causes as to which a dentist or oculist is qualified to certify.

(4) Unless otherwise prescribed by law, sick leave expires at the end of the leave year and is not cumulative and may not be granted at the beginning of the leave year immediately following a period of absence in a nonpay status in the preceding leave year unless and until there has been a return to actual duty in the new leave year.

(5) Sundays and holidays within a period of sick leave will be charged as sick leave except when immediately preceding or following a period of sick leave if the officer or employee was in a pay status immediately prior to or following such Sundays or holidays.

(6) Notification of absence on account of sickness shall be given as soon as possible on the first day of absence. Application for sick leave must be filed within two days after return to duty.

(7) The application for sick leave for periods in excess of two days must be supported by the certificate of a registered practicing physician or other practitioner, except that in remote localities where such certificate can not reasonably be obtained, the applicant's signed statement as to the

sickness and the reasons why a certificate is not furnished may be accepted. For periods of two days or less, up to an accumulation of 12 days in any one leave year, the applicant's signed statement on the required form may be accepted.

Paragraphs Nos. 510 to 520, inclusive, are revoked.

Comment: Mr. W. W. Stockberger, Director of Personnel and Business Administration of the Department, in letter of March 6 to Chiefs of Bureaus and Offices, writes as follows regarding paragraph (7):

"One of the evident purposes of the paragraph is to establish the sufficiency of the applicant's signed statement alone, without acknowledgment before a notary, as to applications for two days or less. Bureaus are therefore requested to see that the two lines, 'Subscribed and sworn to before me this \_\_\_\_\_ day of \_\_\_\_\_, 193\_\_\_\_\_, \_\_\_\_\_

Notary Public'

following the 'Certificate required for sick leave for two days or less' on the reverse of Department Form No. 17, 'Application for Leave', are canceled on all stocks in their possession.

"Revision of the form will be made when the present supply is exhausted."

Employees are requested to go through their supply of leave slips and see that the applications for sick leave are marked in accordance with the above instructions. The revised leave slip will omit the statement quoted above, but present forms should be corrected and used until exhausted.

H. P. Avery

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#### NEW ANNUAL LEAVE LEGISLATION

W. W. Stockberger

(P.B.A. Circular #226, April 12, 1933)

The Act of March 20, 1933, Public No. 2, 73d Congress, repeals, effective March 31, 1933, the furlough provision of the Economy Act of June 30, 1933. Section 215 of the latter legislation reduces the amount of annual leave with pay, as distinguished from sick leave, to 15 days, exclusive of Sundays and holidays, accumulative indefinitely. This section, temporarily suspended during the life of the furlough provision, becomes effective from and including April 1, 1933.

The aggregate annual leave allowable during the period April 1 to December 31, 1933, for departments where, as in Agriculture, the leave is on the calendar year basis, is 11-1/4 days - decision of Comptroller General of April 6, 1933, to the Civil Service Commission, A-48960. The annual leave may be granted under the Department's leave regulations, that is, all at one time, or fractionally, for employees of a year's service or more; as earned at the rate of 1-1/4 days per month for appointees within a year, par. 486 Administrative.

Employees who have been absent on furlough leave for less than 18 days up to March 31, 1933, may be granted such additional furlough time absence between April 1 and June 30, 1933, as, added to that already taken, will not exceed 18 days. Applications for absence during the three months period when the two kinds of leave are available should clearly indicate the kind desired.

NO SALARY FOR PER DIEM EMPLOYEES FOR HOLIDAYS

H. P. Avery

We have been informed that the administrative regulations of the Department, which are now undergoing revision, provide that employees who are employed on a per diem basis will not be paid for holidays unless work is actually performed. It applied to all per diem employees whether appointed or hired under letter of authorization. This ruling is in accordance with decisions of the Comptroller General and cancels the regulations in effect prior to July 1, 1932, which authorized payment to per diem employees for holidays if they worked the day before and the day after the holiday.

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DIETRICH PREFERABLE AUTHORITY FOR CRONARTIUM RIBICOLA

According to an article by Dr. Perley Spaulding, which appeared in the February issue of "Phytopathology", Deitrich, rather than Fischer, is the preferable authority for Cronartium ribicola. Dr. Spaulding states:

Klebahn's recent publication of Deitrich as the authority for Cronartium ribicola is of interest to Americans because the fungus is a permanent factor in North American forestry and because our extensive researches on the disease must be continued for an indefinite period. In 1909 the writer encountered the problem of the author who should be credited with the name C. ribicola. \*\*\* Klebahn's method of attack in solving this problem was as follows: Dietrich's name technically was a nomen nudum, but he showed plainly that the fungus was a Cronartium and lived on Ribes. He then considered Fischer's name and concluded (justly the writer believes) that the fungus was inadequately described to distinguish it from other species of Cronartium, except for the fact that it lived on Ribes. He then took up more recent and complete descriptions, like those of Ed. Fischer and his own. He decided that all failed to distinguish C. ribicola from other species of Cronartium unless the host were known. Even then, on the same Ribes host, species like C. ribicola and C. occidentale can be distinguished only by biometric means or pedigreed cultures. He, therefore, concluded that, without knowing the pine hosts, Dietrich's simple statement that it was a Cronartium living on Ribes was as good as later descriptions and that he should be given credit for discovering, recognizing, and naming the fungus. The writer is heartily in sympathy with this decision, which he believes is a result of sound common sense and logic. Hereafter he intends to write the name Cronartium ribicola Dietrich.

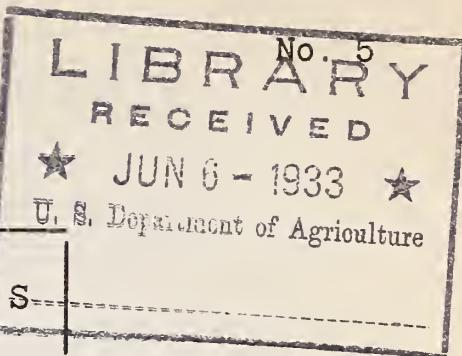
Reviewed by H.T.W.

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PHENOLOGICAL DATA

The first open aecia of the 1933 season in Massachusetts was reported by Agent Brockway on a white pine in the town of Norwell, Plymouth County, on April 3.

May, 1933



## THE BLISTER RUST NEWS

Issued by the Division of Blister Rust Control  
and the Cooperating States.

CONTENTS

	<u>Page</u>
A Few "Values" of the Depression .....	84
A Review of Cooperative Control in Western Massachusetts .....	80
Additional Notes on the Improvement of Weeviled White Pine	
Plantations .....	85
Administrative Notes .....	87
Agent Assists at Boy Scout Planting Program .....	88
Blister Rust Control Season Opens in Pennsylvania .....	77
Blister Rust Material Appreciated by College .....	81
Blister Rust Notes from Rhode Island .....	78
Control Work Under Way in District 1, New York .....	82
Escaped <u>Ribes aureum</u> Found .....	75
Infection Study Plots in Warren County, New York .....	81
Latent Infections .....	83
Memorandum Regarding Employment .....	88
New County Ribes Elimination Camp in Wisconsin .....	77
1933 Control Work Started .....	80
Notes from District 1, New Hampshire .....	82
Nursery Sanitation South of Pennsylvania .....	83
Phenological Data .....	79
Present Status of the White Pine Blister Rust in the	
Province of Quebec .....	73
Publications .....	88
Spring Notes from the Berkshires, Massachusetts .....	76
Squirrel Food .....	76
The Winter in Blister Rust Control Work in Massachusetts .....	72
Travel Allowance Shall Not Exceed Lowest First-Class Rate .....	87

U. S. Department of Agriculture  
Bureau of Plant Industry  
Division of Blister Rust Control  
Washington, D. C.

THE WINTER IN BLISTER RUST CONTROL WORK IN MASSACHUSETTS

C. C. Perry, Mass.

Blister rust control activities in Massachusetts since the close of the 1932 Ribes eradication field season have included the usual pre-season contact with property owners, town officials, and others in anticipation of a continuance of control efforts during 1933. Agent Roop, the dean of the Massachusetts personnel, was on an administrative furlough from October 1932. He returned to the work on April 16 with his usual vigor and "ready to go" spirit.

An effort was made during the winter to attempt to revise our map record system to take care of deficiencies that have from time to time appeared. As a preliminary step, a study was made of the systems in vogue in Connecticut, New Hampshire, and New York, for the purpose of determining what features of any of these systems could be made use of in devising a new plan for Massachusetts. Since 1922, we have used a two-time enlargement of the topographical map as a base on which to keep our field data. These township maps have provided inadequate, however, for the recording of any detail, because of their scale. In our endeavor to arrive at a tentative system for trial during the 1933 season, we first endeavored to determine for ourselves just what date a blister rust control map system should provide, and then confined our plans to the procurement of the minimum of detail. Very briefly, our conclusion was that a system of mapping for blister rust control work should show (1) the location of the pine in a block; (2) the relative maturity of the pine; the percentage of pine in the stand, etc., and (3) the locations where the Ribes were found during the control work. We believe that our prime interest is in locating the white pine and the Ribes, and that other matters are more or less extraneous, particularly so when we consider that we really have no extra funds to expend on mapping and that our interests are essentially concerned with the adequate control of the disease. As to a suitable scale on which to show these essential data, it was our conclusion that an eight-time enlargement of the topographical map is the most satisfactory base. The point is that if we intend to spend the time to procure the data, we should have just as much space as possible on the map on which to record the facts found in the field. A tentative legend has been decided upon, but due to unavoidable circumstances, including the assignment of Agent Clave to assist with drafting and statistical work in the Boston (Federal) office for a two months period, there has been little or no opportunity to map very much territory during the winter. Agents Clave and Doore have collaborated with the State Leader in this winter project.

The State Leader has devoted his spare time to the preparation of a special report, reviewing the accomplishments in the control of the rust in Massachusetts, with particular reference to the period from 1922-1932 inclusive. In this report an attempt was made "to inventory and evaluate the results of the initial application of control measures" and to point out the minimum requirements for the maintenance of the adequate control of the rust.

Additional black currant location work was performed on Cape Cod by Agent Brockway. Open conditions in that section permitted the completion of the canvass in the townships of Brewster, Dennis, Harwich, and Yarmouth. May 1, 1933.

PRESENT STATUS OF THE WHITE PINE BLISTER RUST  
IN THE PROVINCE OF QUEBEC

By Rene Pomerleau, Forest Tree Diseases Research  
Laboratory, Berthierville, Quebec.

(Extracts from the 23rd and 24th Annual Report of the Quebec Society for the Protection of Plants, 1930-1932.)

Introduction

The white pine blister rust has, for some time, greatly interested Foresters and Plant Pathologists, still nothing of a serious nature had been attempted to stay its havoc; we knew very little of the extent of its ravages and did not realize how serious an enemy it was to the propagation of this species of trees. However, the question is once more to the fore, and last year, after having noticed the extended nature of the infection in the nurseries around Berthier, we were assigned by the Chief of the Provincial Forestry Service, at Quebec, Mr. G. C. Piché, to take effective means to cope with this destructive plague of our forests. \*\*\*\* We now present a summary of the facts that we have gathered in the course of the last season including what we have ascertained through our bibliographic survey.

History

The white pine blister rust has only recently invaded this country, but it has been in evidence both in Europe and in the United States where it has been recognized as a serious disease. \*\*\*\* The Province of Quebec was free of this pest for a long time, and this caused us to believe that it could not gain any footing here, due to climatic and other unfavorable conditions. But contrary to expectations a few scattered trees giving evidence of this disease were found in Ontario in 1914 and in Quebec in 1916. It was first found in the Province of Quebec by Fraser on gooseberry bushes at St. Anne de Bellevue and at Oka in 1916, and later on, on white pines in the seigniory Perthuis in Portneuf County in 1918. Since then it has made itself apparent in various sections from year to year.

Importance of White Pine

From a practical standpoint, the stands of white pine in the Province of Quebec are limited to the Valleys of the St. Lawrence, the Outaouais and its confluents, while it is found in small quantities up to Abitibi Lake, and towards the north shore in the neighborhood of Seven Islands. At this date there is still some growths in the St. Maurice valley, the Outaouais, the Gatineau, and in certain regions of the south shore of the St. Lawrence from the American frontier up to Dorchester County. We quote what Mr. G. C. Piché, Chief of the Provincial Forestry Service, wrote in this connection in 1917:

"Setting aside the sections where the white pine is scarce, we can estimate that this tree is still an important factor over an area of about 37,000 square miles in the Province of Quebec. And taking as a basis the explorers' reports with the measurements taken during their explorations, we have reason to believe that the total volume of white pine in this province amounts to about 25 billions F.B.M., which, at \$4.00 per M.F. would give a value of \$100,000,000 for this species of wood just as it stands in the forest.

"The yearly output of white pine is about 250 million feet B.M., of which 80% comes from Crown Lands licensed to dealers, and the balance from private lands. The Province actually collects an annual revenue of about \$450,000, or a quarter of the total revenue from woods operations. Since white pine has an average value of \$22.34 per M feet in Quebec, it follows that each year this species contributes a sum of over \$5,000,000 to the commerce of our province."

Since that time, no doubt a considerable change has occurred through the extensive exploitation of the forests and particularly by forest fires both of which have reduced the extent and the density of this species within the limits of the Crown Lands. \*\*\*

#### Importance and Distribution of the White Pine Blister Rust in the Province of Quebec

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As we have already stated, the official records showing the presence of this disease in the Province of Quebec go back to 1916 and 1918. Today, it is scattered in some proportion almost everywhere, even outside of the white pine area. \*\*\* We noted, during last year's excursions, that the presence of the disease had spread more or less on the pine trees and the Ribes at Berthierville and its neighborhood, at Oka, Hudson, LacBeauport, St. Anne de Beaupré, Lotbinière, St. Jovite, l'Annonciation, etc. It was particularly at St. Jovite that the ravages were most prominent.

In the plantation of the International Paper Company, Ltd., located along the shores of the Cachee River, County Terrebonne, over 50% of the pines planted are seriously attacked, while the balance is due for an early demise because of the almost incredible abundance of Ribes here. In this same region other plantations were also affected but to a much lesser extent, namely about 10%. In 1930, in the plantation of the Department of Lands and Forests, at Lachute, we found young trees already infected.

The foregoing examples regarding the existence of the white pine blister rust will suffice to demonstrate that this disease is of grave concern to this province. However, its invasion is still recent as our observations indicate that none of the cankers were more than 6 or 7 years old, hence the infection most likely commenced in 1924 or 1925. There may be cases where the date of infection is more remote but surely the number is insignificant.

Since the rust is in evidence in all inhabited sections we wonder if it does not exist also in leased forests or other limits. This problem has not been studied in its entirety, still we found that 45% of the young pines in the forest of the Trembling Mountain were seriously affected, but on the other hand, at River a l'Aigle, in the Gatineau district where white pine is to be found in reasonably large quantities, we failed to find a single sign of the disease either on the pines or on the leaves of the Ribes.

#### Distribution and Frequency of the Ribes

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The species of Ribes, whether wild or cultivated are well spread throughout the province, but the wild species are particularly in evidence where the land is wet and abounds with tree growth. Taking as a basis our

observations from the work already accomplished, there would be from 5 to 15 bushes of Ribes to the acre. In the River Cachee plantations, where an attempt was made to eradicate this species, there were 600 to 800 bushes to the acre. \*\*\*

The species of Ribes most in evidence is, without any doubt, Ribes glandulosum, on which blister rust is almost invariably found. Then comes R. cynosbati, which is almost as prolific, while R. triste var. albinervum is also quite in evidence and almost always affected with the blister rust. R. lacustre is somewhat less in evidence but it seems to be susceptible to the blister rust as well. R. americanum which is preeminent along rivers and streams, especially in the neighborhood of the St. Lawrence River, is also affected similarly to the preceding species. The latter is sometimes cultivated as a fruit bearing shrub, while the other Ribes such as R. hirtellum and R. oxyacanthoides are rarely found in these regions. Ribes nigrum, which is generally under cultivation amongst the farmers and gardeners, is an important factor in the distribution of the blister rust. As a matter of fact most of the leaves of this species are covered with spores during the month of August. R. grossularia and vulgare, could be cultivated to better advantage than the foregoing, because they are less susceptible to the attack by the blister rust, and while we find many gardens where R. nigrum is highly infected, it is difficult to find even a trace of any infection on R. grossularia, and still less on R. vulgare.

#### Preliminary Work Completed in 1931

The program for the preliminary work which we were called upon to accomplish last year comprised the following two principal objects.

1. The inspection of the white pine nurseries in certain counties in the neighborhood of Berthier, and the education of the owners of white pine stands.
2. The establishment of a protective zone around the Provincial nursery at Berthierville.

#### Conclusions

\*\*\*\* Today, after the work we have just accomplished, we cannot be absolutely sure of its success, but we believe that we have taken the right steps towards the eradication of the disease in the Province of Quebec. We believe that we have demonstrated, through this humble contribution, the extent and the importance of this new field of action, and what we have already done is at least a good start against the grave menace of the blister rust.

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#### ESCAPED RIBES AUREUM FOUND

Mr. R. A. Sheals of the Bureau of Plant Quarantine informs us that he found two escaped Ribes aureum, yellow flowering currant, not over two years old, in a fence row near Whitemarsh Country Club, Chestnut Hill, Philadelphia, Pennsylvania, on May 11, 1933. This is of interest as the finding of escaped aureum is a rare occurrence. Mr. Sheals believes that these bushes probably sprung from seeds dropped by birds.

SPRING NOTES FROM THE BERKSHIRES, MASSACHUSETTS  
G. S. Doore, Mass.

Wild Ribes

Wild Ribes were found in many localities in Sheffield and Great Barrington on April 19. Ribes leaves were just starting to uncurl on the sheltered areas on the southeast slopes. With a few more warm days this month conditions should be favorable enough to start wild Ribes eradication in certain sections of southern Berkshire County. In fact, plans have been completed to start two foremen with cooperators on May 2.

Test Tube Specimens

Thirty test tube specimens were cut and preserved during the early part of the week of April 17. In addition to this supply of educational material, two large Bell jars  $1\frac{1}{2}$  by 2 feet in height were cleaned out and fresh stem cankers inserted for display purposes this season.

Plans for Work on State Forest Lands in the District

The Division of Forestry of the Massachusetts Department of Conservation will cooperate in the control of blister rust on their holdings in Berkshire County this season. An initial conference with Chief Forester Cook took place during furlough leave the last week in March. Since that date plans have matured and the actual work of Ribes elimination in and about all pine areas on State forests in the county will start June 1. Detailed type maps of the State Forests will be made available to us and should prove a big factor in keeping the general costs of the work at a low figure. Ribes cynosbati, R. hirtellum, and R. glandulosum will be encountered, and it will not be surprising if R. lacustre are found in at least one section. Pine infection is known to exist in many areas.

April 25, 1933.

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SQUIRREL FOOD  
J. K. Kroeber, Mich.

On visiting our blister rust damage demonstration area near Ishpeming, Michigan, on April 30, Mr. H. N. Putnam and I were surprised to see the amount of damage a family of red squirrels could do in the course of one winter. Many young trees with stem cankers were completely girdled. The crowning achievement was the cutting of hundreds of twig cankers from a fifty-foot pine. So many infected twigs of this large tree had been clipped off that they covered fully a third of the ground space under the tree. Examination of these twigs revealed that each had been chewed off in the center of the swollen canker. The infected twig was not clipped back far enough to prune off the entire infection, a substantial part of it being left on the tree to follow its devastating course toward the trunk.

The deep snow this winter no doubt forced the rodents to feed on cankers more this year than usual.

NEW COUNTY RIBES ELIMINATION CAMP IN WISCONSIN  
T. F. Kouba, Wis.

Door County, Wisconsin, located in the extreme northeastern part of the State expects to give occupation to some of its unemployed by using them to control white pine blister rust within the county. A somewhat different cooperative plan has been proposed for this county than for any other county within the State which has carried on the work. Here-to-fore the policy has been for each pine owner to furnish the labor needed for eradication work on his property. Instead, Door County will assign a group of men from the county poor relief list to assist the pine owners.

In order to use these unemployed men according to this plan, and also to good advantage, it has been decided to establish a camp consisting of 42 of these men. A State blister rust foreman will have charge of the entire group. He will be assisted by two men furnished by the county who will supervise three crews each. Crew foremen for each of the six five-man crews will be chosen from the unemployed laborers. To complete the camp personnel there will be a cook and his two assistants.

One week or more of field training will perhaps be necessary for the men to become familiar with the work. After they have shown that they can do creditable work they will be assigned to specific pine areas for cooperative work with pine owners. Shortly after an area has been gone over by a crew the State foreman himself will examine it.

All of the men in the camp, except the State blister rust foreman, will be working for the county. Their pay will be based on an hourly rate, one-quarter of it in cash and three-quarters of it in future credit for necessities for the workmen and their dependents.

This county Ribes elimination camp is a new venture in Wisconsin. The aim is not only to give men employment but employment of such a nature that the county will feel a direct benefit within a short time.

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BLISTER RUST CONTROL SEASON OPENS IN PENNSYLVANIA

Spring blister rust control activities are now under way throughout the State under the supervision of R. P. Fatzinger, State Leader, who is attached to the U. S. Department of Agriculture with headquarters in the Harrisburg office of the Department of Forests and Waters. Other federal blister rust agents now on duty are W. M. Palmer, Jr., who is working in Susquehanna County with headquarters in Montrose; S. J. Kern who works in Wayne and Pike Counties with headquarters at Hawley; and Marco DeBerti, Bradford and Tioga Counties, with headquarters at Towanda. The latter two men resumed their positions in blister rust control work on April 17.

Richard M. May represents the Bureau of Forest Protection of the Department of Forests and Waters as forester cooperating with the various district foresters in the control of white pine blister rust in the State Forests.

BLISTER RUST NOTES FROM RHODE ISLAND

A. W. Hurford, R. I.

Blister rust control crew work started on April 3rd when a four-man crew commenced work scouting for and eradicating European black currant bushes in the city of Providence and also assisted on some miscellaneous educational work. At present a five-man crew is employed and the Rhode Island nurseries which grow white pine are being inspected. Control is being established in and around these nurseries through scouting for and eradicating all currant and gooseberry bushes found growing within 1,500 feet of five-needle pines. All European black currants have been destroyed in the vicinity of these nurseries in former years, and nursery sanitation conditions were established in and around these same nurseries last year. This year's inspection reports, however, indicate the wisdom of making periodic inspections in and around white pine growing nurseries. A cultivated Ribes bush was found to have sprouted up again near one nursery. In the vicinity of another nursery wild Ribes had come up from seed along a roadside where the brush was recently cut and the soil disturbed. These wild Ribes were very small and may have been present, but concealed, last year in the thickets.

Plans are being made to continue blister rust control work in white pine areas as soon as the nursery sanitation work for the year is completed. The State started to reexamine pine areas last year and this work will be carried on as rapidly as available funds permit.

\* \* \* \*

The writer has expressed himself in the past as concerned with the damage which may be done through the interstate shipment of diseased white pine nursery stock. A few years ago such diseased stock was used to establish sixteen Rhode Island white pine plantations. In 1931 and 1932 control measures were taken to check the spread of the disease in these areas through Ribes eradication and, in addition, all trees found infected were destroyed. It was predicted at the time that a few more infected trees probably would be found later when the cankers were more apparent. About one-half dozen more trees in one of these plantations were found infected this week past. Since a thorough examination has not been made as yet there is nothing to write about now except to emphasize the difficulty of eradicating the blister rust in a plantation established with diseased nursery stock. The writer knows of nurseries that have lost business because they could not sell land-owners white pine nursery stock guaranteed to be free from blister rust. It would be of benefit to all agencies who plant trees or who pay blister rust control costs, and to nurserymen who grow five-needle pines, to give serious attention to this important problem.

\* \* \* \*

In a talk given at a meeting of the Providence Lions Club in April of this year, Miss Edith Kempthorne, National Field Director of the Camp Fire Girls, Inc., said she associated New England and white pines in an interesting way.

She stated that whenever she thought of New England scenery she visualized white pines. The fact that white pines attract many visitors to New England is known. However, in a period when the market value of all tree crops is very low the aesthetic and recreational values of white pine should not be overlooked in urging its protection.

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#### PHENOLOGICAL DATA

##### New York

Mr. H. G. Strait, agent in District #1, New York, writes on May 5 as follows: "The first aeciospores were noted this season in Greene County at an elevation of 1,000 feet on April 21. I believe this is a little later than usual for this section. A check on the development of foliage conditions on Ribes, however, did not show much difference over previous years. On May 1, when eradication work started here in this district the foliage conditions were about the same as last year. All Ribes leaves are well formed although still small, but easily identified from other shrubbery."

Dr. Ray R. Hirt in letter of April 23 informs us that Ribes nigrum was just unfolding its leaves on April 21, and that a few of the aecial cankers on the trees in the forest had aecial blisters well developed and ready to release aeciospores.

##### New Hampshire

Mr. L. C. Swain writes: "Aecia was first noticed April 20 on the Pawtuckaway State Forest Reservation in Nottingham, New Hampshire. On the same day Ribes hirtellum buds were plainly in evidence in Brentwood and one leaf 1/2 inch in size was found. This location was an open springy pasture. On May 1, R. hirtellum leaves in the same area were fully developed in some instances, while nearby bushes had not passed the bud stage. In mixtures of spirea the two plants seem to be about equally developed.

Mr. S. H. Boomer reports that the first open aecia for the 1933 season in District #4, New Hampshire, was found on April 29 in the town of Conway. He states: "Skunk currants in the open have small leaves on May 9, while in the woods the buds are just beginning to swell. The season is late and the ground has been frozen some each morning for the past week."

##### Massachusetts

Mr. G. S. Doore informs us that "Aeciospores were being liberated from cankers in several localities in Sheffield and Great Barrington on April 19. Only one or two blisters were open on each infected tree, however."

A REVIEW OF COOPERATIVE CONTROL IN WESTERN MASSACHUSETTS

G. S. Doore, Mass.

Private cooperators have done their full share in holding the blistert rust in check in western Massachusetts. The area to which this statement applies includes 52 townships in Berkshire, Franklin and Hampshire (North) Counties. The following summary of certain principal phases of the work accomplished during the nine-year period up to and including 1933 may be of interest:

No. of cooperators doing wild Ribes eradication.....	2,270
No. of cooperators destroying cultivated Ribes only.....	198
No. of acres cleared of wild Ribes .....	623,993
No. of wild Ribes found and destroyed.....	1,553,434
No. of cultivated Ribes destroyed (including <u>Ribes nigrum</u> )	30,481

The average cost of eradication per acre is just below 10¢

The total expenditures by private cooperators for initial work in Berkshire County for the nine-year period amounted to \$11,878.94, while the total expenditures by private cooperators for initial work in Franklin, Hampshire (North) Counties amounted to \$11,481.49. These figures show a rather striking similarity in expenditures for two entirely different districts. In Berkshire County, for example, many of our cooperators have been wealthy estate owners, while in the other section of the district, the great majority of cooperators were small land owners and "dirt farmers". In the case of reeradication activities, it is of interest to know that to date private cooperators have expended slightly more than the State in the control of the rust, private funds amounting to \$4,398.80 as against \$4,088.59 expended by the State.

Thus far it has been difficult to make expenditures by local cooperators equal those of the State because of the fact that considerable scouting is done at State expense. Furthermore, in many instances cooperators are unable to hire additional labor to assist in control work and in such instances the expenditure by the cooperator does not match the cost of our foremen, who as skilled workers, are and have every right to be paid a higher rate than that of the day laborer on the farm. From our experience last season on reeradication work, we are inclined to predict that the 1933 season will find private funds exceeding those scheduled to be expended from State funds.

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1933 CONTROL WORK STARTED

T. J. King, N. H.

Eradication in New Hampshire was started on May 8 by Agent F. J. Baker, May 9 by Agent King, and on the 10th by Agent Richardson. The crews of Agent Baker and King are engaged in nursery sanitation on the lands of the Keene Forestry Association and the State Forestry Department Nurseries. The crew of Agent Richardson is engaged in town cooperation.

INFECTION STUDY PLOTS IN WARREN COUNTY, NEW YORK  
N. H. Harpp, N. Y.

The eradication of currants and gooseberries for the protection of white pine from blister rust has been carried on to a greater or lesser degree in Warren County, New York, since 1918. There have been a great many discussions since that time about the degree of protection that is actually being established.

We have used several different methods of eradication, all of course tried out with the idea of eliminating the bushes with as little cost as possible and getting as much protection as could be obtained for the dollar. The cost of eradication per acre has varied with the type of country to cover, amount of bushes per acre, etc., but with better methods being established from time to time, the cost involved has been lowered a great deal. Experimental work on the reseeding and "coming-back" of Ribes has been carried on with a great deal of benefit.

Recently there have been 16 infection study plots established in this county on areas which were cleared of Ribes prior to 1927. These study plots have shown that the results of the eradication from the standpoint of protection are encouraging. We found even where the eradication job might not have been 100%, that almost no new infection had occurred. The largest bushes were, of course, the most dangerous. If a few small bushes have come back they have apparently done very little damage, at least so far.

Over the areas which were checked, we found 858 infected trees still alive and 413 dead from blister rust, making a total of 1,271. The years in which the 858 infections took place were as follows:

1912..... 3	1918..... 50	1924..... 153
1913..... 0	1919..... 126	1925..... 126
1914..... 28	1920..... 37	1926..... 81
1915..... 11	1921..... 33	1927..... 23
1916..... 20	1922..... 76	1928..... 7
1917..... 22	1923..... 55	1929..... 5
		1930..... 2

To the best of our knowledge the dates mentioned above as to the year in which these infections took place are correct. In most cases it is hard to be certain of the exact time.

In my opinion, the cost of a reeradication job in most cases would be very low.

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BLISTER RUST MATERIAL APPRECIATED BY COLLEGE

Dr. B. L. Richards of the Utah State Agricultural College, to whom we recently sent some blister rust material for classroom use, writes:

"I wish to express my appreciation for your assistance in having sent the blister rust material for my class in Forest Pathology. This material arrived in very fine condition and was of immediate and effective service to my students."

NOTES FROM DISTRICT 1, NEW HAMPSHIRE

L. C. Swain, N. H.

Radio Talk Creates Interest in White Pine

During a radio talk which I gave recently, the value of white pine as building material was emphasized. Houses 250 years old which are just as square and liveable as ever were used as examples of the everlasting quality of white pine. A day or so later a man came in the office and said that he and his wife were soon going to build a house. They had listened to the radio talk and would surely specify white pine. Quite a number of references to the broadcast by people throughout the district seem to point to the educational value of the radio broadcast.

4-H Club Members Learn Forest Practices

Eighty people, mostly youngsters from 4-H Clubs gathered at a forestry field meeting to learn about good forest practices. They took 48,000 transplant and seedling trees with them for starting home woodlots. The planting stock was furnished free to the club members by the State Forestry Department.

Use of Pine Pruning Saws

For several years I have secured pine pruning saws for people wishing to work on their pines. Instructions were given to them as to procedure, and it has been interesting to note results. Some of them have done as advised, but most of them have been overzealous and have pruned everything they came to. It has, however, given them an interest in their pine lot by actual hand labor which they didn't have before.

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CONTROL WORK UNDER WAY IN DISTRICT #1, NEW YORK

H. G. Strait, N. Y.

Most of the eradication jobs that will be done in District #1 this year have been mapped and classified according to the New York system. This will assist materially in speeding up the work throughout the season. Some of the foremen, who did the mapping last fall at the close of the eradication season, are now on the job and going over their own maps will be very easy when compared to working on strange maps.

One of the jobs we had to pass up last year for lack of cooperation came up the first day the foreman started work this season. This particular area contained a wet run peppered with black currants and, for a fact, I didn't blame the owner from shrinking a little when he was told those blacks had to come out. The vegetation was very dense there in August and it did look like a tremendous job. But this spring when we went there, about all that was green were the black currants and they "sort of" stood out as a challenge to us. The rush of spring work on the farm had not started and so it all looked rather simple after all. The psychological moment had arrived.

LATENT INFECTIONS  
E. M. Brockway, Mass.

Dr. Martin's item in the January issue of the NEWS on the subject of latent infections prompted me to visit a number of locations where infection had been noted on our interview cards for work performed during the early years of our initial control program. I visited several places in Bridgewater and East Bridgewater, where the records indicated that in 1922, 1923 and 1924, infections were present on pines on properties involved in the removal of cultivated Ribes. Unfortunately, the records were not made in considerable detail, but I am convinced that many of the infections now present were not visible at the time the initial work was performed. Two places in particular originally had cultivated black currants, and there are enough 1923 and 1924 infections present now to furnish ample proof that the places were taken care of at the right time. Otherwise, we might have had a duplication of the conditions such as took place at the old Pembroke Arms area. It is encouraging also to know that there were no young infections originating subsequent to the completion of the initial control work.

The importance of informing our cooperators regarding this matter of latent infections, and the continued production of aeciospores from old cankers, was first impressed upon my mind back in 1929, a year following our completion of initial control work in the town of Stoughton. I had received a call from a 1928 cooperator who complained that he found fruiting cankers the spring following the removal of Ribes, and wanted to know "how come". It appeared that during the winter months he had his hired man do a lot of thinning, pruning, and releasing, and in April he had noticed many fruiting cankers that he had never seen before. Upon my response to his call for a conference, he began at once to tell me what a poor job had been done on his property. He finally gave me the opportunity to explain the situation to him, and subsequently we reexamined his land and found no Ribes. This convinced him that my story was true. Since that incident in 1929, I have made it a point to stress this particular information with the cooperators and others, and I am sure it has been the means of strengthening our work. It is unfortunate that this point was not sufficiently emphasized during the early years of control work.

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NURSERY SANITATION SOUTH OF PENNSYLVANIA

Interest as well as action in blister rust sanitation of nurseries south of Pennsylvania has developed with the southward spread of the disease into Maryland, Virginia and West Virginia. Protective zones were promptly established around the State nurseries at College Park, Maryland, at Charlottesville, Virginia, and at Greenbottom, West Virginia. This protective work turned out to be relatively simple and inexpensive because no wild Ribes were found and cultivated Ribes in the vicinity were not much of a problem. Similar conditions were found in the protective zones established around five commercial nurseries in these States. The above nurseries were fortunately situated with respect to Ribes and can now grow white pines without any fear of blister rust damage. On the other hand, the forest service nursery at Parsons, West Virginia, was not so favorably situated from a blister rust standpoint. In the protective zones that

have been established around this nursery 7,471 wild Ribes have been eradicated. Most of these were the wild gooseberry, *R. cynosbati*, but a few wild black currants, *R. americanum*, and some escaped cultivated red currants are included in the total. In addition a number of cultivated Ribes located within the protective zones had to be removed. Although in general Ribes are less numerous in the southern Appalachian region than further north they often occur in unexpected places and nurseries growing white pines should carry out blister rust control measures around their premises to protect the young trees from this destructive disease.

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A FEW "VALUES" OF THE DEPRESSION

N. H. Harpp, N. Y.

In Warren County, New York, there are over 100,000 acres of natural white pine. This is approximately one fifth of the total area of the county. The average price paid for white pine logs in the county during the period 1915 to 1920 was about \$4.00 per market, or approximately \$20.00 per thousand feet, and the demand for lumber at that time was so great that it appeared that everybody could sell an unlimited amount. Because of this, the trees on many areas were cut to a very small size and this has had at least some effect on the present crop.

Due to the slump in log prices there has been very little lumbering in this section since 1920, as compared with a few years previous. This, no doubt, has worked hardships on a few individuals, but on the whole it is a benefit for the county in general. We now have a better watershed and a great many stands have grown to the point where they will make a better type of lumber and someone will reap the profit. If the pine on some of these areas, where there is now a cut of 40,000 board feet per acre, is left another 40 or 50 years, why will it not compare with the lumber cut from the so-called virgin trees we hear so much about? In my opinion, this pine being left to grow for a reasonable length of time has also put our summer resort on a higher standard.

Another value of the depression is that during the past two years, due to economic conditions, many people have not been as busy as in normal times and the blister rust control agent has been able to get their cooperation.

In this county there are 11 townships. As mentioned before, we have over 100,000 acres of white pine, also approximately 250,000 acres of other timber cover and about 150,000 acres of open land. This figure for open land includes around 50,000 acres of idle land which could be planted to forest trees to good advantage.

Before the slump in the sale of logs and other lumber products here, most of the softwood logs were delivered to the mill by way of rivers and creeks. Due to the damage done by jams this practice was discontinued to a great extent even before the market dropped. There are 25 small sawmills scattered over the county. Very few of these mills use hardwood logs to any extent and of course the demand for any kind of timber at present is small. Most everyone deals some in western lumber and a few handle all sorts of building supplies. By using the waterways but very little for the delivery of logs, it appears to me that the small mill is going to be benefitted greatly in the future. The man with a few logs for sale per year is frequently much better off because his hauling problem is less.

ADDITIONAL NOTES ON THE IMPROVEMENT OF WEEVILED WHITE  
PINE PLANTATIONS\*

A. C. Cline and H. J. MacAloney

Except in the comparatively few intensively managed stands where special efforts are being made to grow high quality white pine, the weevil (Pissodes strobi Peck) continues its attacks practically unabated. Indeed, in some sections of central and southern New England it is difficult to find a sizeable tree which has escaped attack. Most of the present naturally seeded stands are composed largely of forked and crooked trees of little value, and a considerable portion of the planted stands promises nothing substantially better. The loss in stumpage value caused by the ravages of this insect during the past half-century amounts to millions of dollars.

Fortunately, satisfactory methods of control are now available, though not generally known to woodland owners. Authorities generally agree that for the best results white pine should be grown sparingly in mixtures with hard-woods, usually on cut-over land, or possibly with certain fast-growing conifers. This is a reversion to conditions similar to those under which white pine grew originally. \*\*\* The removal of infested leaders, spraying with a repellent, banding with a sticky material, and similar treatments have in general proved costly and unsatisfactory.

Recently the authors suggested an entirely different method of approach. Instead of attempting to reduce weevil attack, the plantation is allowed to go untreated until it has reached pruning size: that is, until the dominant trees have attained a total height of at least one log (12 to 16 feet). Then from 200 to 400, per acre, of the best formed trees are selected and pruned as final crop trees, and at the same time all overtopping, severely damaged trees are eliminated by girdling. Usually two or three treatments, spaced at intervals of about three years, are required to permanently free the crop trees and complete the pruning of their butt logs. This method is especially well suited to plantations with spacings ranging from 5 to 7 feet, for with such densities of stocking there are enough straight or nearly straight trees to form a final crop. But there are a great many young plantations with wider spacing, or numerous failed places, due to poor planting or weak nursery stock, which do not promise a sufficiency of well-formed trees for making a final crop. Poorly stocked plantations are in fact very common in the region, and it is with such that the authors deal in this paper.

Continued observations in severely weeviled plantations, especially in connection with the pruning and girdling method just referred to, have shown that forked trees in particular are invariably considered too poor to use as final crop trees, and thus the degree of forking in a plantation is often of major importance. In addition to extreme crookedness the reason for rejecting forked trees is the necessity of making a large saw cut to remove the extra stem, or stems. The cut may require so long to heal that wood-destroying fungi gain entrance and cause decay in the butt log. A fork is distinguished from a crook in that it consists of two or more leaders, or stems, of approximately equal size contending for leadership, whereas a crook is simply an offset in the stem of a single-stemmed tree. \*\*\*.

If it is true that the amount of offset in a stem is directly related to the number of joints killed in weevil attack, and that forks are the more serious type of deformity, then it is worth while to consider means of confining larval activity to the topmost joint, and of correcting forks soon after they develop while the stems are still small. It is noteworthy that in previous publications on the white pine weevil the removal of the dead leader has been considered solely from the standpoint of killing the larvae before they mature, thereby reducing the number of adults that would be available for the next season's attack. \*\*\*.

### Conclusions

\*\*\* Whether in a given case the increased damage will be of sufficient importance to warrant an extra expenditure to prevent the weevil from tunneling more than the topmost joint depends largely on the prospective number of well-formed crop trees available. Where the spacing is in excess of 6 feet and weeviling is severe, plantation owners may well consider spending a reasonable amount each year in the proper and timely cutting out of infested leaders. \*\*\* Especially in cases where owners have adopted the practice of removing weeviled leaders each year, it is to be strongly recommended that henceforth the work be done with a view toward restricting the damage to a single joint. This involves timing the operation with the progress of the larvae down the leader, which in turn requires more frequent inspection and treatment than with the old method. \*\*\*

Where yearly cutting of leaders is considered too costly or impracticable, it is suggested that at least one operation be carried out for the purpose of correcting forks. By cutting all but the largest or straightest of the contending stems before they have reached more than 1 or 2 inches in diameter, a large wound will be avoided, the amount of crook reduced, and the tree saved for later use as a crop tree. Not every forked tree, of course, is worth treating. Due to repeated attacks some individuals are so bushy and contain so many forks that any time spent for corrective treatment would be wasted. Application of the suggested treatment should in most cases be limited to those forked trees having a single fork composed of not more than three main stems, one of which is reasonably straight. Considerable discrimination must be exercised in the choice of trees, bearing in mind that 100, or even 50, trees per acre in addition to the unforked trees of admissibly good form will in all probability be sufficient to make a fully stocked final crop. Such a treatment might well be carried out when the trees in the plantation are about 10 feet high. Many of the forks which develop during the next few years can be corrected in the course of the regular pruning, which normally begins when the trees have reached a height of about one log. As previously stated, the higher forks will be composed of stems of comparatively small size. The authors are strongly of the opinion that the early correction of forks will be a very profitable undertaking, especially in those severely weeviled young plantations which promise to have a deficiency of well-formed crop trees at pruning age. It is obvious that the treatment suggested would be wasted if applied to closely-spaced plantations which contain more than enough good trees to form the final crop. For open land still unplanted it is advisable to use a closer spacing, and to forego all direct control measures and corrective treatments.

ADMINISTRATIVE NOTES

TRAVEL ALLOWANCE SHALL NOT EXCEED LOWEST FIRST-CLASS RATE

May 13, 1933.

Dr. W. A. Taylor,  
Chief, Bureau of Plant Industry.

Dear Dr. Taylor:

I have your memorandum of April 28, 1933, calling my attention to a decision of the Comptroller General dated April 7, 1933, numbered A-4545 and A-14235, caption, "Use of United States Government Transportation Requests for Securing One-Way Tickets," in which memorandum you ask to be advised if a traveler of your Bureau must use the cheapest rate of transportation in all cases where such may be available; specifically, whether employees must use the tourist sleeper, where available, instead of standard Pullman sleeper.

Section 10 of Title II of Public No. 428, 72nd Congress, making appropriations for the Treasury and Post Office Departments for the fiscal year ending June 30, 1934 and for other purposes, is as follows:

"Whenever by or under authority of law actual expenses for travel may be allowed to officers or employees of the United States, such allowances in the case of travel ordered after the date of enactment of this act shall not exceed the lowest first-class rate by the transportation facility used in such travel."

You are advised that employees of the Department of Agriculture are entitled, under the regulations, to first-class railway transportation, unless otherwise specified in their travel authorization. However, under the above-quoted section, such travel must be made at the lowest first-class rate. For instance, it will be necessary to purchase a round trip ticket, if cheaper. Also, when an employee is traveling between Washington and Baltimore, for instance, a parlor car seat would not be permitted. This is for the reason that the journey would be of such a short duration that there would be no necessity for such parlor car seat.

The Traffic Office of this Department advises me that a tourist sleeper is not first-class, and in answer to your specific request in regard thereto, you are advised that it will not be necessary that an employee use such class of accommodation instead of the standard Pullman sleeper.

Very truly yours,

(Signed) Seth Thomas,  
Solicitor.

MEMORANDUM REGARDING EMPLOYMENT  
(B.P.I. Memo 708 - May 3, 1933)

Gentlemen:

In view of the present economic conditions and the large number of people with inadequate means of support, it becomes highly desirable that employment, in so far as is practicable, should be distributed to those who alike are competent and in need. No temporary employment of members of the families of our regular staff will be approved. This prohibition applies equally to employment under letter of authorization. Any recommendations submitted on which there would appear to be any question should contain full information in regard to any relationships to other employees. It is not intended that the Bureau should employ people not thoroughly qualified for the work to be done, but among those qualified it is desired that every effort be made to employ those first who are in need and have dependents.

Very sincerely,

(Sgd.) Wm. A. Taylor,  
Chief of Bureau.

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AGENT ASSISTS AT BOY SCOUT PLANTING PROGRAM  
T. J. King, N. H.

On Saturday, May 6th, the writer assisted at the planting of black walnut nuts on the ground of the High School at Concord, New Hampshire. The actual planting was done by Troop No. 79, Boy Scouts of America as part of their participation in the nationwide program which has as its goal the planting of 5,000,000 nuts or seedlings during the next five years. The writer gave a brief talk on "Trees as Good Citizens".

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PUBLICATIONS

Cline, A. C. and MacAloney, H. J. - Additional Notes on the Improvement of Weeviled White Pine Plantations. Publication No. 24. Published by the Connecticut Forest and Park Association.

Clinton, G. P. - Notes on Three Serious Tree Diseases (Chestnut Blight, White Pine Blister Rust, and Willow Scab). 23d and 24th Annual Report of the Quebec Society for the Protection of Plants, 1930-32, p. 13-19.

Macgillivray, James - When Pine was King. American Forests, April 1933.

June, 1933

## THE BLISTER RUST NEWS

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U. S. Department of Agriculture

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and the Cooperating States

CONTENTS

	<u>Page</u>
Blister Rust Control Activities in District #13, New York .....	92
Blister Rust Infection in Maine .....	99
Cankers Tell the Story .....	101
Emergency Conservation Work in Blister Rust Control .....	90
Field Season Opens in Hancock, Knox, Penobscot and Waldo Counties, Maine .....	90
Fungus Which Has Destroyed Many Nova Scotia and New Brunswick Beech Trees is Found in New England .....	102
New Pet for White House Presented by Former Blister Rust Cooperator .....	94
Notes from Maine .....	97
Phenological Data .....	97
Preparation for Conservation Corps .....	95
Press Service Desires Clippings from Newspapers, Magazines, etc., on the Farm Act .....	103
Publications .....	104
Reforestation in Southern Berkshire .....	98
Results of Applying Dry Chemicals to <u>Ribes missouriense</u> at Oregon, Illinois .....	100
Roadside Demonstrations in New York .....	93
Spring of 1933 in Massachusetts .....	91
Spring Storm Raises Havoc with White Pine in Grafton County, N. H. ....	92
Studies to Determine Necessity for Ribes Eradication Carried on in New Hampshire .....	96
Tree Planting Demonstrations Conducted in New York .....	103
Winter Killing of Coniferous Trees in Minnesota .....	97

U. S. Department of Agriculture  
Bureau of Plant Industry  
Division of Blister Rust Control  
Washington, D. C.

EMERGENCY CONSERVATION WORK IN BLISTER RUST CONTROL

A. E. Fivaz

Blister rust control is an important project in the Emergency Conservation Work program, now well under way. It seems probable that control work will be done on Emergency Conservation Work funds in 23 or 24 States east of the Great Plains, or throughout the range of Pinus strobus. In the West, the work will be largely concentrated in the Idaho western white pine region where 45 full blister rust camps are planned. Four to eight full camps are planned for control work in California and the equivalent of one or more in Oregon. It is estimated that at the height of the eradication season about six per cent of the 275,000 enrolled men will be engaged in Ribes eradication work. In the East alone, if all plans are carried out, 4,500 to 5,000 enrolled men will be used on control operations for the remainder of the season.

Control work will be done on National Forests, National Parks, Indian Reservations, State forests, State parks, and in some States on municipal and private lands. Control work on other than federally-owned land will be conducted under the direct charge of the State Forester in each State.

Wherever possible, our regular control force will aid in organizing and directing the blister rust control projects to be done by the Emergency Conservation Corps. Men qualified for the jobs of technical foremen and checkers are being hired as needed on Emergency Conservation Work funds to assist in the handling of this work. We are responsible for accomplishing effective control work, and every effort is being made to utilize fully this opportunity to get many more acres of white pine protected against blister rust.

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FIELD SEASON OPENS IN HANCOCK, KNOX, PENOBCOT  
AND WALDO COUNTIES, MAINE

H. G. Bradbury, Me.

The field season opened in my district on May 8, with crews starting work in two towns, namely, Camden in Knox County, and Bangor in Penobscot County. On May 15, work was started in the town of Lincolnville in Waldo County, and on June 5 a crew was started in the town of Sorrento in Hancock County. All funds were raised by town or city appropriations, the State adding 50% to the amount raised.

The crews are made up of local men with the exception of the foremen. Some of the men have had previous experience in the work, thus making it easier to train the new men. On the whole the crews are doing very satisfactory work and are finding plenty of Ribes.

Urediniospores were first found in this district on Ribes hirtellum and R. vulgare in Camden on June 7.

SPRING OF 1933 IN MASSACHUSETTS  
C. C. Perry, Mass.

At a conference of the Massachusetts blister rust control agents in Boston on April 21, very little evidence of aecia was reported from the field, and very few reports of advancing Ribes foliage. It was felt, however, that by May 1 conditions in the State would be sufficiently advanced to permit of the beginning of control activities in all districts. This prediction proved to be a reasonable one, because on the 29th the usual signs of approach of spring, such as the full blooming of Forsythia and ground Phlox, the unfolding of the leaves of barberries, cultivated Ribes and honeysuckle, the activities of flies, bees - even an occasional mosquito - and the hatching of tent caterpillars were in evidence. On that date the temperature in Boston reached a maximum of 76. April temperature records were about normal in the Boston weather forecast district, but the precipitation for the month was not. While the average April in Boston shows 3.34 inches of rain or melted snow, April of 1933 produced 7.37 inches, more than twice the normal measurements. Of this amount, 5.11 inches fell on four days, April 4, 12, 13 and 18. On the 13th, five inches of snow fell, but points in northern New England registered two or three feet, the heaviest single fall of the winter.

No change is contemplated in the general policy of conducting cooperative control work with local owners. An additional 25% reduction in the State appropriation for blister rust control work will necessitate a further curtailment in activities which will result in the shortening of the field season to a period not to exceed eighteen weeks. In order to "spread" the employment as far as possible it has been decided to adopt the five day week. Funds will permit the employment of not more than 22 foremen. Lower rates of pay will be necessary in compliance with legislative action, reducing the salaries of all State employees.

In all the five administrative districts in Massachusetts, control activities during the 1933 field season will be centered primarily on reeradication work, while in two districts, the time subsequent to July 1 will be devoted to the continuance of black currant elimination work. It is anticipated that the State Division of Forestry will be in a position to do an increased amount of reeradication on their holdings under the supervision of the blister rust control personnel. Nursery sanitation work will be continued through reeradication of the protection zones established in the environs of the principal white pine producing nurseries. Especial attention will be given to the nurseries of the State Division of Forestry and to the few concerns that produce stock primarily for forest planting purposes.

Control work for the 1933 season was started on May 1 with a force of 20 foremen. During the month we were favored with the best of weather for Ribes eradication, and considering local conditions we received splendid cooperation from property owners. Areas aggregating 25,000 acres were examined, and more than 105,000 wild and 859 cultivated Ribes located and destroyed in cooperation with 142 owners. Ribes sanitation work was in progress in the environs of four commercial nurseries in the State, two of which are applicants for a pine shipping permit, provided by Federal Plant Quarantine #63.

BLISTER RUST CONTROL ACTIVITIES IN DISTRICT #13, New York  
H. W. Holcomb, N. Y.

This year District #13 comprises Allegany and the southwestern tier of counties. The eradication season was opened May 5th, with the reworking of the protective zone at the Horseheads State nursery, Chemung County, where 1,500 feet around the nursery were rechecked for all Ribes, and one mile for Ribes nigrum. On May 11th, the same reworking plan was started at the Painted Post State nursery, Steuben County. It was an ideal time to do the work, however, because the larger percentage of the Ribes found were seedlings or sprouts, and at a later date much leaf competition would have been encountered.

On May 12th, three foremen were assigned townships in Allegany County, where a systematic survey will be made for cultivated English black currants, and private plantations. Although this section is not in the white pine belt, there is much evidence that at one time many good stands could be found. At the present time there are some sections where scattered seed trees were left, and small patches of reproduction are quite noticeable. This leads one to believe that this section may again support some good stands of natural white pine, providing that fire and blister rust are kept out.

Control work will be continued on the Rochester watershed area at Hemlock and Canadice lakes, where several hundred thousand white pine trees have been planted along the slopes and creeks adjacent to the lakes. Here a full crew will be used, due to the abundance of Ribes, mostly wild black currant, which are very large along the lake and creeks. While scouting on the area many bushes ten to twelve feet in height were found.

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SPRING STORM RAISES HAVOC WITH WHITE PINE  
IN GRAFTON COUNTY, NEW HAMPSHIRE.

Thomas L. Kane, N. H.

An unusually late snow storm in April caused considerable damage to white pine in the northern part of New Hampshire. The snow was weighty and taxed the limbs beyond their capacity. The storm was followed by a wind of intense velocity and this added materially to the damage. The writer's attention was first called to the alarming state of affairs when numerous telephone calls came into the office requesting inspection of pines in about every town in the district. A survey showed that the storm had played no favorites as trees that have stood for years and weathered many storms were among those damaged. Even limbs that were ten and twelve inches through were torn from the trees. Lawn and roadside trees, and even those way back in the woods, were all affected.

An interesting feature of the wreckage was the large amount of pine tops that were found on the ground. In almost every instance these proved to be trees that had stem cankers and broke at the time of the storm. An examination of the limbs showed that quite a number were infected with blister rust, but since most infected pines in this neighborhood contain numerous cankers the loss of one or two limbs will not help much in salvaging the tree.

ROADSIDE DEMONSTRATIONS IN NEW YORK

Geo. E. Stevens, N. Y.

We have just completed retagging and redressing several blister rust roadside demonstrations here in New York.

Last week we placed a new demonstration at the settlement of Graphite in Warren County on Hague Mountain, a few miles west of the village of Hague which is on Lake George. This is the first time we have had a demonstration area in this particular neighborhood and we feel it will add materially toward blister rust cooperation in that section. Permission to place the demonstration there was granted by the owner, Mr. Scott Gifford of Graphite. Mr. Gifford cooperated in 1932.

The seven other demonstrations were all retagged, new signs placed, and standards repainted. These include the areas at

Pottersville	- Warren County
Lewis Area	- Essex County
Clemons Area	- Washington County
Stephentown Area	- Rensselaer County
Conklingville Area	- Saratoga County
Mariaville Area	- Schenectady County
Eldred Area	- Sullivan County

Last fall the area at Wells in Hamilton County was removed, as many of the trees along the road had been cut out, making the area undesirable as a demonstration. However, the three years it was used added greatly to the work in that section, and it was one of the best located and most talked of areas we had.

The location and general layout of these demonstrations have been described at length in numerous issues of the Blister Rust News from time to time, hence I shall not take much time to describe them again other than that the new area is similar to the others placed. There are from six to eight signs on each area. The smaller areas do not have the approach signs on the ends, while the larger areas have them, or the areas with the best "straight-a-way" on highways.

The signs are changed slightly each year. The large sign in the middle of the area now reads:

"It pays to Protect White Pine  
From  
Blister Rust

For Further information  
Write  
Conservation Department  
Albany, N. Y."

The approach signs read:

"Blister Rust  
Demonstration Area  
Just ahead on right"

Following the approach sign reads the next sign:

"Blister Rust  
Kills  
White Pine  
Demonstration Here  
Yellow Tags indicate diseased trees"

Another sign reads:

"Uprooting Currant  
and  
Gooseberry Bushes  
Within 900 feet  
Protects White Pine  
from  
Blister Rust"

The words "Blister Rust" on each of the signs are painted red, while all the other wording is black on white.

The signs vary in sizes, the later ones being larger than on the demonstrations placed earlier. In placing future demonstrations, we plan on using fewer but larger signs.

These demonstrations are an important link in blister rust education here in New York and add greatly to building confidence and cooperation in blister rust control.

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NEW PET FOR WHITE HOUSE  
PRESENTED BY FORMER BLISTER RUST COOPERATOR  
G. Stanley Doore, Mass.

Tiny Tre, prize winning English sheep dog, was presented to Mrs. Franklin D. Roosevelt by Mrs. Louis Roesler of Great Barrington, Massachusetts. Tiny will probably go to Warm Springs, Georgia. The dog was on exhibition at the Washington Dog Show in charge of Joseph O'Hara.

The Roeslers like many other summer residents of Southern Berkshire County have taken an active interest in the control of the blister rust disease. Their estate consisting of over 400 acres has been protected from the rust, over 3,400 wild Ribes being found and destroyed during the course of the work. This gives protection to 35 acres of natural white pine growth as well as a 10-acre pine plantation.

PREPARATION FOR THE CONSERVATION CORPS

(Extract from the Western Blister Rust News Letter for May, 1933.)

The part thus far played by the Western Blister Rust Control office in the Civilian Conservation Corps program has consisted of numerous general preliminary arrangements and the operation of a training camp for camp superintendents. This was started at Clarkia, Idaho, on May 11 and continued until May 20. The results were that a considerable number of specially selected men were given a relatively short but very intensive course of training in purposes and methods of blister rust control and are now ready to go to the field in the capacity of camp superintendents.

The training school was opened with a general discussion of the problem confronting organizations administering blister rust work in the West. The background responsible for the adoption of the emergency conservation work program was covered very thoroughly. The general aims, to get work done as well as give the men employed the highest type of instruction in woodmanship, forestry and conservation, planning and organization, were discussed at length.

Following the opening discussions the general subject of white pine blister rust was taken up. Mr. Wyckoff discussed the history, spread, development in Europe and America, life history, cycle, hosts, and concluded with a statement of the general situation in the Inland Empire.

Exhibits, pamphlets, articles and various other materials were provided for the use of men in training.

In the afternoon the entire group of men was divided into parties of about ten men each under the leadership of permanent employees of the Division of Blister Rust Control. The parties then proceeded to examine the blister rust along the Middle Fork of the St. Maries River east of Clarkia and to study the topographic features and other factors affecting the spread and development of blister rust. On each party discussions were held frequently as they moved from one location to another covering stages of the rust, rate of development, cycles, hosts, etc., which were discussed in the forenoon.

Following this general discussion regarding the nature of the disease and of its control, the balance of the training period was largely devoted to intensive instruction in field practices. As much time as possible was spent in the field. Rainy days and evenings, however, were devoted to further discussions and instruction in preparation of field records and reports. On two occasions the Clarkia school board donated the use of the school building and light plant for illustrated lectures on the disease and control practices. Upon the first occasion slides were shown illustrating the disease and its effect on pines and the general phases of control. The second set of slides dealt particularly with the eradication work. Pictures of the various eradication types and the aerial views of several areas to be worked were analyzed and the information utilized to point out the probable density of Ribes population and the working conditions which would be encountered. The aerial photographs were also used as examples to illustrate our methods of making preliminary surveys.

Field work consisted of actual practice on control operations. The men were divided into small groups, each under the supervision of an experienced instructor. Both hand pulling and spraying methods of Ribes eradication were demonstrated to these men and were actually performed by them. Sufficient time was spent on these assignments so that each man was able to become familiar with the methods of work. They were also instructed in detail regarding the laying out of areas and blocks in preparation for crew work.

So far as can be judged, the camp superintendents' training school adequately accomplished its purpose. Numerous favorable reports both from those in attendance and from others who had occasion to visit Clarkia at that time seem to indicate that we have been able to develop a group of men originally selected for administrative ability in the field and who are now ready to assume the positions of camp superintendents and adequately meet the problems which they will there encounter.

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STUDIES TO DETERMINE NECESSITY FOR RIBES ERADICATION  
CARRIED ON IN NEW HAMPSHIRE

L. E. Newman, N. H.

The need for determining the location of sites initially worked for Ribes five or more years ago and now requiring rechecking has long been recognized. However, in view of the considerable areas in this State yet remaining to be worked the first time over, no definite studies, outside of advance scouting and mapping, had been made for this purpose. Consequently, studies were undertaken in blocks initially worked in 1923 and forms for reporting these studies and outline of procedure were sent to the agents. A list of 1923 blocks, in which an abundance of Ribes originally grew, were also forwarded to the several districts and recommendation made that such blocks be inspected first.

Contrary to the general belief, however, reoccurrences of Ribes, either from seed, sprouts or due to missed bushes, were noticeably few. It would appear that the initial working had been not only of high quality but that disturbances to the forest floor were insufficient to effect Ribes germination and growth.

A total of 35 investigations were carried on in 23 towns, although many other areas were examined. Of the 35 blocks rechecked, eight need reworking in 1933, five in 1934, two in 1935, five in 1936, and one in 1942, making a total of 21 blocks needing reworking. In all blocks only a small portion will require intensive work.

In considering a State-wide program of further investigations the writer believes that more satisfactory progress will be made if each agent confines inspection to but one town at a time. The town selected should be one in which all initial work was completed five years or more ago.

NOTES FROM MAINE  
G. H. Kimball, Me.

The field season started on May 8 in the writer's district, with one crew of welfare labor at Gardiner, and one at Falmouth, the latter being town cooperation. On May 15, a welfare department crew was started at Bath. On May 22, eradication work started in Old Orchard - a cooperating town. On May 29 a crew from the welfare department started at Lisbon, and on June 5 at South Portland.

The necessity of hastening our regular control work in order to devote all our time to Civilian Conservation Corps Camps has resulted in some changes. Welfare crew work in Bath and Gardiner was stopped and on June 5 work was started in Turner and Westport, this being town cooperation.

\* \* \* \* \*

Agent D. S. Curtis writes that crews made up of welfare labor started eradication in the following towns: Sanford on May 8, Bridgton on May 11, and Mexico and Rumford on May 16. Eradication work was also started in Farmington on May 22 and in Carthage on June 5, these being cooperating towns.

PHENOLOGICAL DATA

Massachusetts

The first evidence of the uredinial stage was reported by Agent Brockway on Ribes sativum in Rochester (Plymouth County) on May 24. On June 1, the stage was found by State Leader Perry and Agent Roop in Amesbury (Essex County) on the same species.

Maine

Agent J. M. White informs us that on April 20 leaf buds were opening on Ribes hirtellum bushes and aelial blisters were just breaking through the bark on diseased pines in the town of Benton. Uredinia were noted on R. hirtellum leaves in the town of Fairfield, Maine, on May 18.

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WINTER KILLING OF CONIFEROUS TREES IN MINNESOTA

L. B. Ritter, Minn.

Considerable winter killing of coniferous trees is noticeable this spring in Minnesota. Arbor vitae shows the most injury, white pine is second, and spruce third.

Physiologically, winter injury and drought injury are the same, both resulting from moisture deficiency, as during the winter soil moisture is not available. Winter killing may occur in two ways: evaporation of water from the leaves by warm winds, and the withdrawal of water from the cell solution by freezing. The latter occurs when warm weather is followed by a sudden cold snap. Water is then withdrawn from the cells and crystals of ice formed on the intercellular spaces.

REFORESTATION IN SOUTHERN BERKSHIRE  
(Extract from the Berkshire Courier, May 18, 1933)

Land Owners Association Undertaking Large Project Aimed at the  
Protection of Streams and Refuelling of Land - About  
100,000 Transplantings Completed.

"An extensive and well planned program of reforestation is being carried out by the Southern Berkshire Land Owners Association under the direction of Russell S. Smith, President of the organization.

"Early in the history of the association, it was realized that successful conservation of wild life depended upon the presence of natural food and cover. Those representing the land owners would want to make contact with Professor Fisher, Director of the Harvard Forest. Professor Fisher made a survey of conditions in Monterey, and spent much time during two years with the association members in planning their reforestation.

"A thirty-four acre tract bordering the Konkapot River was selected to serve as a model plantation. Eighteen years ago this place was cut for its pine timber. Since the cutting, the acreage has been used for pasturing cattle. A trip into the lot reveals that the project was viewed from every possible angle, before a single tree was planted. Larch and hemlock were planted near the waters edge to shade the stream and enhance its scenic beauty. Twenty feet back, sweet apple trees have been placed at intervals to provide food for muskrats. Norway and blue spruce composed the next belt of planting. Hardwoods, including white birch, oak, maple and walnut, make a mixed forest behind the evergreens. The trees have not been promiscuously planted, but rather in blocks, the location of which will encourage their growth and add to the beauty of the hillsides.

"Employees of the S.B.L.O. Association in preparing the land for planting, have not cut any brush that provides food for birds or beast. Even the thorn apples have been spared. Partridges feed upon the berries of that tree. However, special care has been taken to uproot currant and gooseberry bushes, hosts of the white pine blister rust. White pines found to be infected are being cut out.

"Last year 13,000 trees were planted. At the completion of this season's planting activity, between 800,000 and 1,000,000 will have been set in. Sixteen land owners in the townships of Otis, Monterey, Great Barrington, New Marlboro, and Tyringham are cooperating in this really new industry in southern Berkshire."

\* \* \* \* \*

Note. All white pine areas in the above-mentioned towns have received initial protection from the rust. Reeradication is now taking place in several of the towns where Ribes were found abundant in the early protective work and where infection on pine continues to be rather general.

Our largest land owners along with the numerous small owners who have cooperated in the control of the rust, are back of this reforestation

project. Those members of the organization who own white pine have had experience in combating the rust, and are apparently taking no chances with the disease. The association is well established and has influential backing, both at home and in the State legislature. The project will be carried on for years to come, and blister rust control is on the ground floor, so to speak. This is one more concrete instance showing that our informational and service campaign in this section is really bearing fruit.

G. S. Doore, Mass.

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#### BLISTER RUST INFECTION IN MAINE

J. M. White, Me.

An example of the destructiveness of blister rust in young white pine stands can be seen in the town of Solon, Maine. The pines on this area are from six to eight years of age. Two plots which were laid out in different parts of the area in the winter of 1930 and the spring of 1931, show 25% and 44% infection, respectively. Mr. W. O. Frost, who inspected the area this spring, was surprised at the amount of infection on the area as a whole. Conditions like these make one realize that immediate control work is necessary, or the future for pine in such places is impossible.

\* \* \* \* \*

In the spring of 1932 a number of large pines, varying from six to fourteen inches in diameter, on the Eaton lot in the town of Solon, were examined for blister rust. In the very tops of these pines many young cankers were noted. This shows that older growth trees are not immune. These infections are not noticeable at present from the ground.

\* \* \* \* \*

In 1930, in the town of Oakland, an area of skunk currants was eradicated. Unbeknown to the crew or foreman, the area was marked, and this season it was reexamined. The original count of bushes found was 513, while in the reexamination it was found that not over 30 plants have reoccurred. This shows that if good eradication work is performed the reoccurrence of Ribes is slow.

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According to the opinion of the Solicitor of the Department of Agriculture, the salary of a Federal employee is exempt from taxation by the State.

RESULTS OF APPLYING DRY CHEMICALS TO RIBES  
MISSOURIENSE AT OREGON ILLINOIS.

H. N. Putnam

In September, 1932 on ex-Governor Lowden's estate and the Pines State Park at Oregon, Illinois, roughly measured amounts of dry ammonium thiocyanate and sodium chlorate were applied at the bases of large clumps of Ribes missouriense after the duff had been scraped away. Immediately after application the chemicals were covered with duff. On May 16, 1933. the gooseberries treated were examined for the effects of the chemicals. The results shown are given in the following tables:

Plot No.	Chemical	Treatment Sept. 24-30, 1932				Alive May 16, 1933		
		Application (Pounds)	Bushes	F.L.S.	Lbs. Chem. per 1000 FLS	Bushes	F.L.S.	Remarks
Pines 1	Am. thiocyanate	6.00	2	3500	1.70	1	.3	Crown sprout
Farm 2	" "	12.50	29	5710	2.19	5	13.0	Crown sprout & few small leaves along stems.
Pines 2	Sod. chlorate	5.75	2	2200	2.61	1	25.0	Small leaves along stems.
Farm 1	" "	6.00	7	1625	3.69	3	250.0	" " "
Farm 3	" "	9.25	10	3025	3.06	1	15.0	Normal leaves on young growth
Farm 4	" "	9.00	15	2970	3.03	0	0.0	All dead
Farm 5	" "	8.00	40	4000	2.00	8	150.0	Imperfect treat- ment of edge.
Farm 6	" "	2.50	1	1000	2.50	0	0.0	All dead
Farm 7	" "	3.00	5	4000	0.75	3	225.0	Insufficient chemical.
Totals	Am. thiocyanate	18.50	31	9210	2.01	6	13.3	
	Sod. chlorate	43.50	80	18820	2.31	16	665.0	

% Efficiency of Am. thiocyanate by bushes = 80.6%; by live stem 99.9%  
% " " " Sod. chlorate " " = 80%; " " " 96.5%

No injury was apparent to any large tree growth although on Plot 4 a large oak was within one foot of a treated and dead Ribes bush. A few small willows 4 feet high were damaged on Plot 5 and on Plot 3 a dogwood 4 feet high one foot from a dead Ribes had been killed. The grass around treated bushes was not damaged.

The efficiency of dry applications of ammonium thiocyanate in killing R. missouriense seems to be somewhat greater than sodium chlorate and apparently a smaller amount of ammonium thiocyanate per unit of live stem is required.

There appears to be little relationship between the amounts of chemical per unit of live stem used in this experiment and its killing power.. Complete death of bushes resulted from the use of 2.5 and 3

pounds of sodium chlorate per 1,000 feet of live stem. Practically the entire live stem was killed by the use of ammonium thiocyanate at the rate of 1.70 pounds per 1,000 feet of live stem. On the other hand 3.69 pounds of sodium chlorate per 1,000 feet of live stem caused only 85% death, while .75 pounds caused 94% death.

Several instances of scratching away the duff and gnawing of the basal bark was evident on bushes treated with sodium chlorate. No disturbance was noted on bushes treated with ammonium thiocyanate.

This experiment is being continued. Observations will be made relative to sprouting and seedling growth.

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#### CANKERS TELL THE STORY

(Reprint from Berkshire Courier, June 1, 1933)

Blister rust cankers tell stories, the details of which may not be generally understood by white pine owners. For instance, old cankers tell old stories of damage that could have been prevented had we applied the remedy in time. New cankers tell a tale of recent developments and their origin can be prevented with your cooperation. There is a big difference from the standpoint of control of the rust between old and new cankers. The difference is very important and should be more generally understood, since the age of a canker is a perfect indicator as to whether or not efficient eradication of currant and gooseberry bushes has been accomplished.

Infection had become very general throughout the southern part of Berkshire County before effective measures for protection were established. In speaking of old cankers we refer to those originating before or during the year actual destruction of the currant and gooseberry bushes was accomplished in any particular pine area. A large percentage of the cankers found today actually existed before protective measures could be completed. By young cankers we mean those starting on pine since the initial protective work was completed. These young cankers indicate the continued presence of currant and gooseberry bushes within 900 feet. The bushes may have sprung up from seed or they may have been present at the time the area was first examined but were too small to be seen. It is a physical impossibility to find every bush on a control area, so some might have been missed or improperly pulled.

The statement is occasionally made by pine owners that they protected their pine five, six or eight years ago, as the case may be, and still there is rust on their pines. That fact is true and many of the trees are now dead. It should be pointed out, however, that these trees they refer to were infected before protective measures were taken.

The development of new cankers can be prevented by searching for and destroying all currant and gooseberry bushes that still persist in any pine area. May and June are the best months in which to do this work.

Blister rust is a deceptive pine disease, inconspicuous in the early stages, lingering, slow-working and fatal, but there is nothing mysterious about the disease as far as control is concerned. For further information or inspection get in touch with Blister Rust Control Agent, c/o Chamber of Commerce, Great Barrington, Massachusetts.

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FUNGUS WHICH HAS DESTROYED MANY NOVA SCOTIA AND NEW  
BRUNSWICK BEECH TREES IS FOUND IN NEW ENGLAND

As we have recently had requests from our field employees for information concerning the beech disease which is associated with the European beech scale, we believe the following statement published by the Press Service of the Department on April 4, 1933, will be of interest to many of our readers:

A disease, which has destroyed approximately a third of the beech trees of Nova Scotia and many of the beeches of southern New Brunswick, has now been found in Maine, and the European beech scale, the insect which apparently precedes outbreaks of this disease, has been found in Massachusetts, the U. S. Department of Agriculture reports. Forest pathologists of the department, who have seen most of the chestnut trees of the eastern United States destroyed by the chestnut blight, fear the beech disease may prove to be another similar forest catastrophe, although there is a possibility that the disease is confined to cooler climates and may not spread far south.

The disease is caused by a fungus, a species of *Nectria*, and there seems to be a close relationship between its appearance and the appearance of the beech scale. The scale is a tiny insect which punctures the bark of the tree, after which, the tree specialists believe, the disease can enter the tree and develop. The disease kills a tree within a year or two after it attacks. The insect appears as a white cottony fluff on the bark and later the fungus appears as small red spots on the bark.

R. Kent Beattie, department forest pathologist, who recently returned from an inspection trip, found that there are 13 infestations of the scale in five towns near Liberty in south central Maine. The largest and oldest of these, covering about 50 acres, has the *Nectria* canker, but it has not yet appeared in the other 12. The scale and the disease also occur near Eastport in southeastern Maine. The beech scale has been found on trees in several communities near Boston, although no trace of the disease has been found that far south. The department's forest pathologists and entomologists plan to launch at once an intensive study of both the disease and the insect to learn what control measures, if any, may be used to prevent its spread. Spraying for the scale is effective on individual or small lots of trees, but such a practice is not feasible on large areas, Dr. F. G. Craighead, department entomologist says, and other control methods are wanted. Although the disease has been prevalent for several years in Nova Scotia and New Brunswick, practically nothing done there has been effective against it, and it has baffled forest owners. \*\*\*\*

TREE PLANTING DEMONSTRATIONS CONDUCTED IN NEW YORK

According to a recent press release of the New York Conservation Department, over 82,000 trees were planted this spring during 17 successful tree planting demonstrations among 1,261 boys and girls of the State. School children and boy scouts participated. In 1932, the tree planting demonstrations were participated in by 840 individuals who planted 60,300 trees. The work was done under the direction of George E. Stevens, Supervisor of Forestry Exhibits. This year, the figures show, an average of 74 persons participated in each demonstration and an average of 4,240 trees per demonstration and 65 trees per person were planted.

At each demonstration Mr. Stevens gave a brief talk on reforestation in this State and then instructed the workers how to plant trees. The purpose of these demonstrations is to give first hand instructions to interested persons so that they may learn the proper methods of planting trees. \*\*\*

Note: Mr. Stevens in a recent letter comments as follows on these tree planting demonstrations: "I want to say that at each of the demonstrations I mentioned blister rust and its control along with other forestry practices. Of course, my remarks had to be brief in every case. We used more white pine on these demonstrations than in other years, especially plantings on boy scout camp sites. This is because of my own interest in planting white pine wherever it will grow successfully."

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PRESS SERVICE DESIRES CLIPPINGS FROM NEWSPAPERS,  
MAGAZINES, ETC., ON THE FARM ACT.

H. T. Wright

Dr. W. A. Taylor informs us in B.P.I. Memo. 710, that the Press Service is collecting information on the new Farm Act which was recently passed by Congress to relieve the existing national economic emergency by increasing agricultural purchasing power, etc., and asks our help in supplying them with contributions on this subject in the form of publication clippings or references to where articles may be obtained.

This memorandum states that the Press Service is building up a file of information and opinions from various sources on the Farm Act and that this material will be classified so that writers and others may conveniently make use of it. The file will include press service, newspaper, magazine, farm journals and trade publication material, and anything else that is available, such as statements by business information services and trade associations.

"Let's all be on the lookout for articles or references in local newspapers or other publications relative to the Farm Act, and forward any such material to this office for transmitting to the Press Service.

PUBLICATIONS

Barrett, L. I. - Growth of Northern White Pine in the Southern Appalachians. *Journal of Forestry*, May 1933, p. 570-572.

Carter, E. E. - Freezing Out the Western Pine Beetle. *Forest Worker*, March 1933, p. 10.

Detwiler, S. B. - General Aspects of the White Pine Situation. *Journal of Forestry*, May 1933, p. 514-521.

"Mr. Detwiler points out that the Society of American Foresters has the moral obligation to review the entire white pine situation and make definite recommendations as to future production. Federal responsibility in this matter also is stressed. The white pine type originally occupied over 100 million acres in the United States. Now 20 million acres remain and three-fourths of this has been invaded by the blister rust since 1915. The rust emergency is expected to be met for the present through the work of the Civilian Conservation Corps. Adequate provision for the future calls for regional and national application of the principle of sustained yield. The white pines fulfill all of the requirements governing choice of species in forest management and rate first consideration in planning systematic soft-wood production. The ecological factors also favor choice of white pine as the principal tree in the management type over extensive areas since white pine was the climax species over millions of acres of original forest and was intended by Nature to permanently occupy certain sites. If America had not been invaded by the blister rust, natural regeneration and planting would have reproduced white pine on these sites. This cannot now be accomplished unless control of the disease is maintained. Control over the period of the rotation will add not to exceed a dollar per thousand feet to the average cost of white pine lumber. Ribes can be suppressed through the selection system of forest management thus further reducing the cost of control. Under these conditions it is important that the forestry profession carefully consider the facts and formulate a white pine production policy in harmony with a broad plan of economic land utilization through sustained forest yield." (From *Journal of Forestry*)

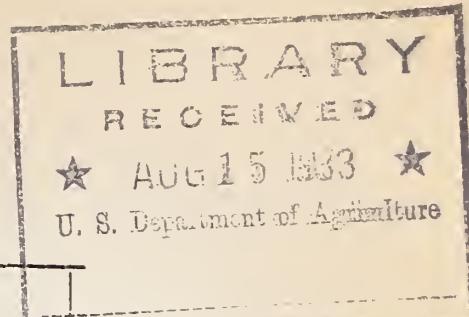
Haig, I. T. - Treatment of Understory Hemlock in the Western White Pine Type. *Journal of Forestry*, May, 1933, p. 578-583.

Kouba, T. F. - White Pine Blister Rust. *Ames Forester*, 1933, V. 21, p. 33-38.

Mielke, Jas. L. - Comparison of Pycnial Stage of Cronartium ribicola on Pinus lambertiana and P. monticola. *Phytopathology*, Feb. 1933, p. 204-205.

Miller, John M. - A Record of Winter Kill of Western Pine Beetle in California, 1932. *Journal of Forestry*, April 1933, p. 443-446.

July, 1933



## THE BLISTER RUST NEWS

Issued by the Division of Blister Rust Control  
and the Cooperating States

CONTENTS

	<u>Page</u>
A Report on the Circulation of Two Blister Rust Educational Films.....	116
A Scouting Trip in New Jersey.....	113
Another Discovery in Minnesota.....	120
Blister Rust Control in Ontario, Canada.....	121
Blister Rust Found on the Superior National Forest.....	116
Blister Rust Work Under Way in the Southern Appalachians.....	106
Brief Notes of Interest from Some of the Lake States.....	119
Control Work in the Shenandoah National Park, Virginia.....	106
Emergency Conservation Work and Blister Rust in Western Massachusetts.....	115
News from Upper New York State.....	110
Nursery Sanitation.....	111
Phenological Data.....	122
Publications.....	122
Reexamination of Colrain State Forest Completed.....	118
Report on Progress of Blister Rust Control in New York State from Opening of Season Until June 30, 1933.....	107
Ribes Americanum Reported in Virginia.....	116
Ribes Lacustre Again Found in Massachusetts.....	110
Side Lights on Nursery Sanitation Work in Connecticut.....	113
Some Notes on the Progress of Blister Rust Control in Connecticut Under the Emergency Conservation Program.....	117
Some Reptile!.....	109
White Pine Blister Rust Investigations.....	114

U. S. Department of Agriculture  
Bureau of Plant Industry  
Division of Blister Rust Control  
Washington, D. C.

BLISTER RUST WORK UNDER WAY IN THE SOUTHERN APPALACHIANS  
Roy G. Pierce

Blister rust work in this region is under way, two men having been appointed by the National Park Service for work respectively in the Shenandoah National Park and the Great Smoky National Park. Mr. E. H. Francis is located in the former park with headquarters at Big Meadows Camp, Skyland, Virginia, and Mr. Joe Frank Manley is at present in Camp 1 in the Smokies with headquarters at Gatlinburg, Tennessee. Mr. G. U. Wolcott has been appointed by the Forest Service to carry on the work in the northern part of the George Washington National Forest. It is very likely that by the 15th of July there will be an additional man on blister rust work in each of the four southern national forests, including the Pisgah, Nantahala, Unaka and Cherokee, while another man will probably be placed upon the southern part of the George Washington National Forest.

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CONTROL WORK IN THE SHENANDOAH NATIONAL PARK, VIRGINIA  
Edwin H. Francis, Va.

The eradication work for blister rust control in the proposed Shenandoah National Park is at present mainly concentrated on the Skyline Drive, as most of the white pine of any sizeable quantity is found here. Furthermore, the actual work is simplified by the presence of only Ribes rotundifolium.

At present there is only one crew in action but we expect that within the next few days there will be at least two more on the job. Although they were green, the Civilian Conservation Corps boys have jumped into the work in a fine spirit and seem very much interested in their work.

There is at present a paucity of white pine in the Park area due to lumbering and fire. However, we are fortunate in the fact that there are several seed trees left by which the area can be further stocked naturally. Already the pines have seeded in in several places along the edge of the existing wooded areas containing the seed trees, and under the cover of the chestnut sprouts. This latter is probably due to the fact that the old canopy formed by the original chestnut trees has been broken up.

Since there is very little conifer material showing along Skyline Drive, the beautiful drive along the Blue Ridge Mountains, it becomes evident that the white pine can be protected in smaller groups than are ordinarily justified because of the landscape effect both in winter and summer.

REPORT ON PROGRESS OF BLISTER RUST CONTROL IN NEW YORK STATE  
FROM OPENING OF SEASON UNTIL JUNE 30, 1933.

H. L. McIntyre, N. Y.

The blister rust control season opened up about the usual time. Its progress from the start has been quite satisfactory. State-owned nursery sanitation work was one of the first projects to be given consideration. On the large nurseries several crews were employed at one time, as a result of which the protective zones were covered in a relatively short time. The *Ribes* condition in some of the zones was somewhat surprising. Quite a few large bushes were found, along with the usual amount of seedlings, crown growth, etc. A brief summary of the work by counties follows:

Saratoga County:

Black currant elimination work was started early in the season and is still in progress. The number of *Ribes nigrum* being found is very surprising. They seem to be quite plentiful, particularly in the populated centers. Protection of County plantings has been one of the big projects so far this season. However, individually-owned land is not being overlooked and cooperation seems to be quite readily obtained.

Warren County:

Black currant elimination work is one of the projects planned for this County. It was started early in the season and is still in progress. Up to the present time, quite a high percent of the County has been covered and only a very small number of bushes have been found. Cooperation on individually-owned land is rather hard to get; nevertheless, progress up to date is quite satisfactory.

In addition to the regular work, a C.C. camp has been established at Bolton, from which it is hoped that we can cover practically all of the State and municipally-owned land in Warren County this season. The work at the camp has been handicapped tremendously by lack of transportation, which applies to all C.C. camps that are later referred to in this report. At this writing, some hundred men are in the field from the Bolton camp. Work has been limited to the Tongue Mountain area.

Essex County:

Work is progressing very satisfactorily. Cooperation of landowners seems to be exceptionally good. The scouting system has been used quite extensively in Essex County and apparently has been tremendously helpful in getting quite a large acreage covered, as well as willing cooperation.

A C.C. camp has been established in Essex County with H. J. McCasland as Superintendent. Some hundred men are in the field from this camp. There is a very large acreage of State-owned land that can be covered from this camp within a radius of twenty miles.

There will also be some blister rust control work carried on from the Essex County District, under direction of Ben H. Nichols, in Franklin County. It is planned to cover a considerable area of State-land from a forestry camp at Goldsmiths and from one at Cross River.

St. Lawrence County:

The work in Kresge's district, due to the type of pine, is limited pretty much to scouting natural stands, plantation inspection and black currant elimination work. A town-by-town canvass of certain towns in St. Lawrence County, as well as some in Jefferson County, is being made. In this survey the different projects listed above are given attention in systematic order. The acreage covered of course is small. Nevertheless, it is an important feature in connection with blister rust control in that section of the State.

Protection of the State Rangers' School property at Wanakena is part of the plan of blister rust control work in Kresge's district. We expect that several crews will be in the field on blister rust control work from the Wanakena camp within a very few days.

Oneida County:

Work in this district is quite similar to that mentioned in Kresge's district. There is, however, a certain amount of County area protection work that is now in progress in Oswego County. Black currant elimination work is being carried out as we go along with the plantation and natural pine inspection work.

One of the largest projects carried on in Woolschlager's district up to date was the eradication job carried out on Hewitt Reforestation Area #1 in Onondaga County.

Allegany County:

Work in the southern section of the State has been divided up this year between Harpp and Holcomb.

Due to many uncertainties at the start of the blister rust control season, it was very difficult to make any definite plans for work in the southern section of the State. Nevertheless, we finally succeeded in making at least tentative plans, and the work is now progressing very satisfactorily.

Holcomb's work at the present time is pretty much limited to protective work on the Hewitt areas in Allegany County. A 1500-foot zone is being covered on all Hewitt areas in that district, which means that part of the work is reeradication.

Black currant elimination work was started as one of the projects in Allegany County; however it had to be discontinued so that we could have proper foremen to man the C.C. camps.

Blister rust control work will be carried out on a cooperative basis through Holcomb and a C.C. camp at Letchworth Park. Crews should be in the field at Letchworth very shortly. It is also hoped that a certain amount of cooperative work from the C.C. camp at Allegany State Park can be arranged for and put into operation.

Otsego County:

Black currant elimination work has been one of the important features in this district up to the present time. However, a C.C. camp, located at Davenport, Delaware County, is now functioning with some fifty men in the field. It is hoped that we can cover all of the State land, plus Hewitt areas and municipally-owned property, in Schoharie, Otsego and Delaware Counties from this camp.

It was originally planned that a certain amount of work be carried on in Chenango County from the Davenport camp, or that possibly the camp would be moved to Chenango County later in the season. This, however, has been overcome through the establishment of a C.C. camp in Chenango County. Blister rust control has been included as one of the projects from the Chenango County camp, and the work is now in progress or will be in the very near future.

Ulster County:

Work here is progressing quite satisfactorily. The number of foremen employed however is rather limited at the present time. Some of our most experienced foremen, who have been employed in this district, have had to be transferred in order to man the C.C. camps. We are now training men to fill the vacancies caused by these transfers in Mr. Strait's district.

Rensselaer County:

Work was progressing very satisfactorily in the early season. However, on account of the necessity of transferring McCasland to supervise the work at a C.C. camp, the work in this county has been discontinued. The foremen were transferred to assist at C.C. camps where their services were needed.

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SOME REPTILE!

R. E. Wheeler, Mass.

Inspectors Bradford and Reeve, assisted by the crew on the Westfield Water Reservation in Montgomery, had the exciting experience of coming in contact with a huge rattlesnake on June 6. They were in the act of pulling a good-sized Ribes bush when they heard a buzz like a locust. Knowing that it was early for locusts, they became alert, and looking about saw Mr. Rattler all prepared to do battle. With their underbrush canes, they began a rapid tatoo on the snake.

Their trophy was a regular "he-sized" fellow, five feet in length and four inches in diameter, having at the time ten rattles. The men were rather reluctant to remain in that particular vicinity, but eventually went about looking for Ribes ever alert, however, for more rattlers.

NEWS FROM UPPER NEW YORK STATE  
B. H. Nichols, N. Y.

In District No. 7, the blister rust control work is now progressing after a cold backward spring had made the work late in getting started. Good success has been had so far in getting cooperation from private owners in both initial and reeradication work. At present we are having a continual spell of intense heat and very little rain.

Renewed effort for the control of white pine blister rust in Essex County within the Adirondack Park is now being put forth by the C.C.C. men who came from New York and New Jersey. The men are unfamiliar with this type of work but they have already demonstrated an interest in the work and a willingness to work and learn, which speaks well for the success of the undertaking.

This work camp is located on State land on the Johnson Pond Road, locally known as the William Brown Lot, in the Town of North Hudson. The work at this camp started for the season on June 15th, and will be confined to the elimination of white pine blister rust. The field work is under the direction of our organization.

The work from this camp is to be done entirely on State land, except where boundaries are needed to protect the land gone over. The work on the State land in this section has been needed for some time, but owing to so much of the appropriated money being used for cooperation with private owners, it had to be neglected until the present time.

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RIBES LACUSTRE AGAIN FOUND IN MASSACHUSETTS  
G. Stanley Doore, Mass.

During June, a small patch of Lacustre consisting of 35 bushes was found in the Town of Great Barrington within the boundaries of the Beartown State Forest. There are many other bushes of the same species in the vicinity still to be eradicated so that the number may run into real proportions before the job is completed. Heretofore, only one or two bushes have been reported in the County, and those are in the Town of Lenox some miles from the present concentration which is several hundred feet above the Lenox site.

It is a rather odd coincidence that both concentrations should have been found in State forests. The first patch (by the thousands) being discovered along a brook in 1926 in the Colrain State Forest at an elevation ranging from 1,100 to 1,300 feet above sea level, in Franklin County. The present patch in the Beartown Forest, Berkshire County, was found at 1,600 feet above sea level and some distance from a brook. Ribes lacustre have also been reported as being present in Monterey, 1932.

It would now seem that the southern range of this species should be extended south to include the southern limits of the Berkshire Hills.

NURSERY SANITATION

By S. B. Fracker, In Charge, Domestic Plant Quarantines  
Bureau of Plant Quarantine, U. S. Department of Agriculture

The annual inspection of nurseries that have applied for permits to ship five-leaved pines interstate in accordance with the regulations of the white pine blister rust quarantine has recently been carried out in part of the Northeastern United States by Mr. R. A. Sheals, of the Bureau of Plant Quarantine, assisted by Mr. L. W. Hodgkins, of this Division. The inspectors report that in general blister rust conditions were found to be decidedly improved around those nurseries that have systematically and thoroughly applied control measures in cooperation with the agents of this Division and the States concerned.

The results of the inspections indicate definitely that the standard of protection from blister rust required by the quarantine can be reached only when the eradication of Ribes is done by a trained crew working under the direction of an experienced foreman at a time of year when the competing vegetation has not developed. In every instance where the owners of the nurseries had attempted to eliminate Ribes in a rather haphazard manner without an adequate or well-supervised crew, Ribes conditions were such that approval of the applications could not be given. This of course does not apply in those sections of Virginia where Ribes are not native.

In connection with the results of inspection in one case where adequate crew work was performed under the supervision of an agent of this Division, Mr. Sheals states:

"Our inspection showed that excellent work was done since only a very few small seedling Ribes were found. This is as good an example of the ability of a crew to eradicate Ribes under extremely difficult conditions as I have ever seen."

In the case of another nursery where similar work was done, he states:

"Nearly every portion of the 1500-foot zone was covered by a crew in close formation. Not a single Ribes plant was found when this area was inspected after the crew work was completed. This is a unique record since it is the first time our inspection has failed to disclose a single Ribes within the 1500-foot zone around any nursery where in previous years wild species had been found."

In still another case he states:

"The 1500-foot zone around this nursery includes a swamp through which previous inspections showed that large Ribes were generally distributed. This area presented as difficult an eradication problem as I have seen. The entire swamp area is dotted with grassy hummocks widely separated by water and mud of depths varying from one to several feet. On these hummocks Ribes grew very vigorously. Small Ribes were found on one rather large hummock only, indicating that Ribes regrowth may not be a serious factor under prevailing conditions."

"When this area was scouted this season, it was apparent from the trail paper that the crew had literally combed the entire swamp as well as other parts of the 1500-foot zone. Our inspection disclosed only a very few small Ribes, many of which had undoubtedly grown since the eradication work was carried on this spring. I have never seen better eradication work done. The nature of the swamp in question is perhaps best indicated by the fact that residents in the vicinity, including the owner, told me that there were many parts of the area in which they would not dare to go. Nevertheless the crew solved the problem and solved it well."

On the other hand, in commenting on the results of the inspection of the 1500-foot zone around one nursery where the original eradication work had been done late in the spring after the vegetation had become very dense, Mr. Sheals states:

"It was found that sufficient large Ribes remained in the protective zone to constitute a menace to the five-leaved pines in the nursery. The eradication work was done by a crew varying from 2 to 3 men, which proved to be inadequate to eliminate all large Ribes under the conditions prevailing at the time of season the work was performed."

In another case where control measures had been applied for several seasons under the supervision of this Division, but where during this spring a three-man crew operated, a considerable number of large wild Ribes in addition to 25 large cultivated currant plants were found in exposed sites within the 1500-foot zones, he states:

"It is evident from the results of inspection that, while eradication measures had been applied several times within the 1500--foot zone as well as extending in several directions to an even greater distance, either the area was not thoroughly covered by a crew in close strip formation or that an inexperienced crew or one of insufficient numbers was used."

There is no doubt but what nursery sanitation work is entirely practicable, even where adverse conditions prevail, if the Ribes eradication is carefully performed by well-trained crews and provided the work is done in the early spring and reinspected each spring to get out any such bushes that may have been overlooked or developed from sprouts or seeds. This project simply requires more thorough Ribes eradication than is ordinarily considered necessary to adequately protect forest stands of white pine.

That white pines in nurseries which have been only partially protected will become infected with blister rust is shown by the fact that during the nursery inspection trip infected pines were found in five different nurseries. With one exception, where the environs of the nursery were not inspected, Ribes were found in close proximity to the white pine stock.

A SCOUTING TRIP IN NEW JERSEY

P. B. Mott, N. J.

A field trip, in the company of Dr. J. F. Martin of the Federal Division of Blister Rust Control, was made during the early part of June covering native white pine stands in western Sussex County and the neighborhood of the Stokes State Forest. Nine sites of planted white pine containing 34,000 transplants and six sites of older planted white pine were examined for blister rust and the presence of Ribes. No infections or wild Ribes were found. Three sites had cultivated Ribes nearby. Several plantations in the vicinity of Chester, Morris County, were also visited. The purpose of the trip was to see first-hand the pine growing in those sections and to look for Ribes in logical sites. No signs of infection on pine were noted, although injuries by ants and by fungi other than blister rust were observed. One red currant at a cabin location on the State forest but not near white pine showed slight uredinal infection. Several logical spots, stone walls, rocky runs, etc., were examined for the presence of wild Ribes but none were found. Failure to find Ribes in such places, which locations if in New England would contain plenty of wild Ribes, may be due to the low altitude and life zones. The highest point in New Jersey is 1,827 feet above sea level at High Point, and in the Appalachian region south of New York, according to Doctor Martin, wild Ribes are scarce at altitudes below 1,500 feet. Another purpose of the trip was to get some idea of the amount of white pine on the Stokes State Forest to determine whether the men from the C.C.C camp located on this forest could be used advantageously in blister rust control work. After noting the small amount of white pine, its scrubby condition due to repeated weeviling, and the general absence of wild Ribes, it was agreed that there was little work for C.C.C men in this connection. A small sample plot of about one acre which was thinned and pruned several years ago by Assistant Forester DeWald was examined and found to be thriving. This led to the conclusion that white pine might be encouraged in some spots by similar treatment and by underplanting hardwoods. General observations for native white pine and wild Ribes were made in Bergen County in the vicinity of East Paterson, Oradell, Westwood, Woodcliff Lake, Oakland, Ohhokus and Paramus.

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SIDE LIGHTS ON NURSERY SANITATION WORK IN CONNECTICUT

B. Ripley Park, Conn.

Ribes infection was first found by our group today (June 7) on flowering currants.

Our biggest count of anything found has been snakes. We have found and killed as high as 25 in one day, including copperheads.

Swamps have been prevalent too--our biggest and deepest one being at Cheshire where we were told by "natives" there was quicksand and that horses and oxen had been swallowed in it.

Only one mishap occurred with us when somebody saved himself from going deeper than his middle by hastily grabbing a "bog".

WHITE PINE BLISTER RUST INVESTIGATIONS

(Extract from Annual Report 1932, New York Conservation Department)

One of the most essential factors in the whole blister rust problem is the question of how much actual damage will be done to a stand of white pine over a period of years, when no attempt has been made to control the disease. For the past ten years the New York Conservation Department has made a study of this problem on a series of permanent plots located in the pine-growing region of Warren, Essex and Clinton Counties. Observations have been made on these plots at periodic intervals during this time so that it has been possible to follow the progress of the disease rather closely and to determine with a high degree of accuracy just what the damage has amounted to from the standpoint of forest management.

This study has meant more than a mere counting of dead and infected trees from time to time. It has, rather, involved a fundamental consideration of the entire matter of forest damage due to parasitic invasion, and has necessitated the establishment of standards by which this damage could be appraised. From a practical standpoint, this project has demonstrated beyond any possibility of doubt that under normal conditions of stocking the effect of an uncontrolled blister rust attack is to convert a promising stand of second growth white pine into an essentially hardwood stand with a scattering of suppressed pines which will eventually pass out of the picture with the increased competition of the other species. This, of course, has been the theory (based on some of the early observations) on which the blister rust control program has operated from the start - yet it is gratifying to have the soundness of the theory tested and proved by definite facts obtained from careful and unbiased study over a term of years.

Eight of the study plots referred to above were reexamined during the 1932 field season. Six of these followed the general trend, but two are worth particular mention because of unusual conditions. (1) On the Spear plot near Lewis in Essex County the currant and gooseberry plants were removed from the vicinity of the pine in 1918, thus protecting it from the severe outbreak of blister rust which is known to have occurred in 1919 or 1920. An examination in 1925 indicated that about 23% of the trees would die from blister rust, having become infected prior to 1918. In 1932, 20% of the trees were dead, in accordance with the prediction made in 1925; yet, due to the early measures taken to control the disease, the damage from a commercial standpoint is practically nothing. (2) On the McCormick plot near Keeseeville in Clinton County a severe infection has taken place in a dense sapling stand of white pine. From the conspicuous appearance of the infected trees, one would be led to believe, after a casual inspection, that a great amount of damage had been done. An intensive study of this plot has shown, however, that in spite of the large number of dying trees, there are still healthy trees distributed over the area at the rate of about 1000 trees per acre---amply sufficient to produce a good stand of pine. As any further infection has been largely prevented

by eradication work in 1928, it can be safely stated that there has been no damage here from blister rust. This plot is cited as an example of the fact that any appraisal of forest damage, whether from blister rust or some other cause, must take into consideration the stand as a whole, and not merely the number of trees affected.

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EMERGENCY CONSERVATION WORK AND BLISTER RUST  
IN WESTERN MASSACHUSETTS  
G. Stanley Doore, Mass.

Early in the afternoon of June 29th the last of the 14 E.C.W. companies scheduled for establishment in Blister Rust Control Districts 7 & 9 set up tent in the Daughters of the American Revolution Memorial (State) Forest at Goshen, northern Hampshire County, Mass. The other camps are located in Franklin County at Erving, Monroe and Wendell; and in Berkshire County at Great Barrington, Otis, Peru, Pittsfield, Sandisfield, Savoy and Becket. In several instances two companies are encamped in the same township. All camps have been established within State forests.

One's first thought might be that the western part of the State was over-populated with camps, but this is due to the fact that approximately two-thirds of the acreage in State forests in Massachusetts are in Berkshire, Franklin and Hampshire Counties.

For the most part the State forests are sorely in need of blister rust protection, many need initial working and a few call for re-examination. With the camps so numerous, at least one being located in every forest, the problems of transportation and protection are greatly simplified.

Since official approval and state-wide plans for cooperation with the E.C.W. were completed late in June, we have made all necessary contacts with State forestry and E.C.W. officials. Our plans to conduct protective work have been approved and cooperation promised by officials in every camp from which foremen and crews will be drafted.

Since the camp in the Beartown Forest is located in the same town as our headquarters and because of the splendid cooperation of the camp and forestry officials, we were allowed to draw men enough for two complete crews as an experiment. They have been organized and in operation since June 13th and have done very creditable work. They have destroyed over 6,500 wild and 28 cultivated bushes. Our experiences with the non-woods-minded men that make up a part of both crews will prove invaluable to us in organizing and training other crews, which from necessity must now be done on a larger scale and in a greater hurry since the eradication season is half gone. We will establish real protection to the State's white pine with the aid of the men from the C.C.C. camps.

BLISTER RUST FOUND ON SUPERIOR NATIONAL FOREST  
L. B. Kitter, Minn.

On June 15th, Technical Forester Gordon Fox found the first blister rust infection that has been found in the Superior National Forest in the N E $\frac{1}{4}$  S W $\frac{1}{4}$  S. 31, T.60 N., R. 3 W. This is also the first time pine infection has been found in Cook County.

About 95% of the pine in a pole stand over an area of about ten acres were infected. A number of trees were killed by trunk cankers at the initial point of infection. Branch cankers were present on the border of the infection area. The infection apparently originated 12 to 15 years ago.

Ribes are abundant in the area; the principal species present being R. hirtellum. About 90% of the Ribes present were infected.

Ribes infection was found in several places along the north shore of Lake Superior the past year. The first infection found in Cook County on Red Currants near Hovland in 1930. No scouting has been done north of Hovland (which is about twenty miles south of the Canadian boundary).

Mr. Fox has seen four years of service on blister rust control in the West and in Michigan.

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RIBES AMERICANUM REPORTED IN VIRGINIA  
J. F. Martin

Mr. Sheals reports finding Ribes americanum growing quite abundantly near Waynesboro, Virginia. The bushes were low growing and had a stunted appearance. Gooseberries, probably R. rotundifolium, are plentiful on the nearby mountains but are not associated with white pine.

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A REPORT ON THE CIRCULATION OF TWO BLISTER RUST EDUCATIONAL FILMS

The 2-reel film "Blister Rust - A Menace to Western Timber" was loaned by the Department for a total of 51 days during last fiscal year. It has been shown some 21 days with a reported attendance of 1,573 people.

"The Pines", also 2-reels long, has been loaned out by the Department for a total of 99 days. It was reported shown 32 times with a total of 2,525 "fans" attending the shows.

SOME NOTES ON THE PROGRESS OF BLISTER RUST CONTROL IN CONNECTICUT  
UNDER THE EMERGENCY CONSERVATION PROGRAM

J. E. Riley, Jr., Conn.

Seven of the twelve Civilian Conservation Corps camps in Connecticut number blister rust control among their work projects. In spite of unavoidable delays due to necessary camp construction, inoculation of the men, lack of transportation and other causes over which the camp superintendents and Army officers had no control, the blister rust projects have made encouraging progress. After a week or more of training, the crews are beginning to function satisfactorily and from now on there is every reason to expect that the eradication efficiency and acreage covered will compare favorably with that of the State and private crews of former years.

At the beginning of the season, prior to the establishment of the Civilian Conservation Corps camps, a training course was organized for the purpose of developing foremen and checkers qualified to handle the blister rust project of the Emergency Conservation Work. This course was conducted in conjunction with the regular scheduled eradication work and differed from the normal work only in the quality of the men selected and in the handling of the crews with a view to developing leadership. All of the blister rust foremen and checkers now employed on the Emergency Conservation Work were trained in this course or in a special nursery sanitation crew which was a development of the training course.

By permission of the State Forester, who heads up the Emergency Work in Connecticut, the blister rust technical foremen and checkers were allowed to report for C.C.C. duty a few days prior to the establishment of the camps. Thus, they had time to size up the field conditions and to lay out some of the control areas in advance, which left them free to devote their whole time at first to the organization and training of crews. Their first task was to select potential foremen. These men were organized into temporary crews and instructed in eradication methods and crew leadership. As soon as crew foremen qualified as such they were given five men each and assigned areas within which to work. At first the green crews required constant supervision and checking by the technical men. Some of the men originally assigned to blister rust control work were unsuited to that type of work and were transferred to other details. Thus, through actual trial workouts in the field, very satisfactory crews were developed.

The acreage covered during this formative period has been rather low, but the quality of Ribes eradication has been surprisingly high. Attention is now being concentrated on the speeding-up of the work through the elimination of lost motion and more extensive methods of covering sparsely populated Ribes territory. It may be safely predicted that the acreage covered per man-hour during the remainder of the season will be at least double that accomplished during the organization period.

Of the various projects undertaken by the Civilian Conservation Corps in Connecticut, none has evoked a more genuine interest and willing cooperation on the part of the men than has the blister rust control work. A majority of the men read the colored folders that have been given them and show an intelligent interest in the efforts that have been made to explain the nature of the disease and reasons for control methods. This is an encouraging sign and augurs well for the success of the project.

Whatever success has been attained to date in the development of the blister rust program has been made possible by the attitude of State Forester Hawes and his organization toward the control work. From the start it has been recognized that the success of blister rust control and like projects depends upon the selection of men who can be depended on to do conscientious work and who have a natural aptitude for work of this nature. Through their efforts it has been made possible to select such men and to keep them, as far as practicable, on the job. The camp superintendents have given the blister rust control organization splendid co-operation in its efforts to organize the project. The constant shifting of men resulting from the selection process has entailed an added burden to their already over-laden shoulders, but they have uncomplainingly borne it on the assumption that we knew what we were doing. It is up to us now to prove that their confidence has not been misplaced.

According to schedule, thirty-six men are to be assigned to blister rust control work from each of the seven camps. At the present time approximately eighty percent of the assigned men are actually working on the job. With the completion of the camp construction now under way practically our full quota will be functioning in the field.

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REEXAMINATION OF COLRAIN STATE FOREST COMPLETED

G. Stanley Doore, Mass.

At the request of Chief Forester H. O. Cook of Massachusetts, a reexamination of the Colrain State Forest in Franklin County has been made. The results of this work show that the initial work was very well done, and no new infections could be found on the pine. One infection area that did not show up well in 1928 has since developed to a point that it attracts considerable attention. During this recent work we found several areas planted to white pine since the initial protection, in fact one area was being planted to pine at the time the crew started eradication work. Fortunately, all pine planted was within our original 900-foot protective zone. This assured some protection during recent years. This time over we have extended the usual zone around the new plantations.

The Forest proper consists of about 1,200 acres supporting some wonderful plantations--some of the earliest in this State. During the past year or so local unemployed labor has been put to work pruning a considerable area to good advantage. Since the Forest is away back in the hills it has not attracted much attention thus far, but as time goes on we venture to say it will be known as one of the best reforested areas in the State, even though in the smaller acreage class. It should be seen to be appreciated. It was here that Ribes lacustre were found by the thousands, the first time that species had been found in the State except as an occasional bush.

BRIEF NOTES OF INTEREST FROM SOME OF THE LAKE STATES

H. N. Putnam, Regional Supervisor

Illinois:

From May 1 to 15, Ribes reeradication was conducted at Oregon, Illinois on Sinnissippi Farm which is owned by former Governor Lowden. An interesting comparison between the two years is shown in the following tabulation:

Eradication	Acres Covered	Total Ribes Pulled	Man Days	Costs (b)	Ribes per Acre	Cost per Acre	Acres per Man Day
1st, Fall 1932	(a) 1350	100,568	133	\$457.08	74.5	0.34	10.1
2nd, May 1933	1350	7,600	33	91.20	5.6	0.07	35.5
Total	1350	108,168	171	\$548.28	80.1	0.41	7.9

(a) Of the 1350 acres, 231 acres were in cultivated fields not necessary to go over, leaving a total of 1,119 acres actually covered.

(b) The 1932 costs included owner's labor, \$305.40, and federal supervision, \$151.68. In 1933 there was no federal supervision and the entire cost was born by the owner.

This work was superficially checked by Putnam on May 15 and found to be satisfactory.

Michigan:

Blister Rust Agent Caswell, carrying on Ribes eradication activities in Montcalm County, ran on to some R. nigrum near Ziegenfuss Lake. Quite a number of leaves had urediniospores and some leaves in addition showed teliospores. This was observed on June 22, 1933.

Kroeber in Upper Michigan reports no further known spread of infection. Blisters appeared on cankers in the middle of May, with aecia being dispersed in the latter part of the month. No Ribes infection was found.

Agent Kroeber assisted by Maner and Bennett made preliminary maps showing location of pine areas and extent of crew and scouting work on the Hiawatha and Ottawa National Forests. These men were assisted by E.C.W. technical foremen who will be doing the actual control work using E.C.W. enlisted men.

In Lower Michigan, Agent Thompson assisted by temporary help made similar pre-eradication surveys on the Fremont Community Forest, Midland Community Forest, Fremont High School planting and Muskegon State Park.

Transplant stock of P. peuce, P. monticola and P. strobus were planted in alternate rows at Ralph, Dickenson County, on an area of heavy infection, in order to test the relative susceptibility of these pines to the rust.

In Upper Michigan, Kroeber assisted in supervising the planting of white pines on four school forests and gave blister rust talks at each of them. He distributed 150 publications and placed several posters. In lower Michigan, Thompson distributed 25 publications and had one item published. He also assisted with the Fremont Community Forest Planting, at which he gave a demonstration in pulling Ribes.

Minnesota:

Agent Dahl did pine mapping in Anoka and Isanti Counties. He found pine infection in Anoka County for the first time (Sec. 19, T. 33 N., R. 22W.) Ribes infection was found on May 27.

Wisconsin:

State foremen in Door County found no pine infection, indicating that the rust on pines is not widely spread in this County. Putnam found leaves of R. cynosbati lightly infected with rust in the uredo stage on May 30 near Keshena in Shawano County. Aecia at this point were about two-thirds dispersed.

On the Argonne National Forest pre-eradication surveys showed the following results: Acres native white pine, 392; Acres white pine planting sites, 7,110.

At this time approximately 55 unemployed men from the poor relief lists who are receiving aid from the County are working in Door County. (Editor's note:-See May issue of the News for a more complete discussion of this plan.)

A 100-man Indian camp is engaged on blister rust control work on the Menominee Indian Reservation. There are about 50,000 acres of white pine on this reservation, 30,000 of which is mature and in need of protection. The rust is present on the Reservation on both host plants.

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ANOTHER DISCOVERY IN MINNESOTA

L. B. Ritter, Minn.

Mr. Gifford Adams discovered a blister rust infection on white pine June 1st, in Section 17, Township 145N, Range 30W. This is the first pine infection discovered on the Chippewa National Forest and is the first pine infection found in Cass County. Dr. Hutchinson, of the Division of Forest Pathology, made the determination.

Stewart found infection on R. cynosbati in two different places in the Forest in 1931.

Mr. Adams is working as technical forester in charge of all E.C.W. blister rust control projects on the Forest. He acquired his blister rust training under State Leader Frost in Maine.

BLISTER RUST CONTROL IN ONTARIO, CANADA

(Extracts from the Report of the Minister of Lands and Forests  
of the Province of Ontario for 1932)

St. Williams:

Ribes eradication in connection with the control of white pine blister rust was carried out at both Stations Nos. 1 and 2.

Ribes Eradication Station No. 1

<u>Area Inspected</u>	<u>Year</u>	<u>Plants Destroyed</u>	
		<u>Gooseberries</u>	<u>Wild Currants</u>
400 acres	1929	3,774	1,494
800 "	1930	1,768	1,374
800 "	1931	2,415	2,246
800 "	1932	2,027	1,260

Inspection commenced August 8th and was completed October 3rd. Five men were constantly employed on this work which entailed a labour expenditure of 1,540 hours.

Ribes Eradication Station No. 2

<u>Area Inspected</u>	<u>Year</u>	<u>Plants Destroyed</u>	
		<u>Gooseberries</u>	<u>Wild Currants</u>
200 acres	1931	752	2,347
250 "	1932	420	3,234

Inspection at Station No. 2 commenced August 24th and work was completed by September 23, 1932, entailing a total labour expenditure of 595 hours.

Orono:

Ribes eradication was continued this year over the area which was cleared during 1931. A close check-up showed that satisfactory results were obtained from last year's work and that wild Ribes are well under control. Unfortunately, the cultivated black currants in the village are a very serious source of infection. Every black currant bush which was inspected was severely infected and, unless some degree of control can be established over these cultivated bushes, infection is bound to persist.

As a result of this situation, no white pine were transplanted on the nursery nor were any white pine seed beds set out.

Midhurst:

The Ribes eradication program started last season was continued this season. The whole area was again intensively gone over and all species of Ribes were eradicated when noticed.

PHENOLOGICAL DATA

Massachusetts:

The first evidence of the telial stage was reported by State Inspector Crockett on skunk currants in Petersham (Worcester County) on July 7th.

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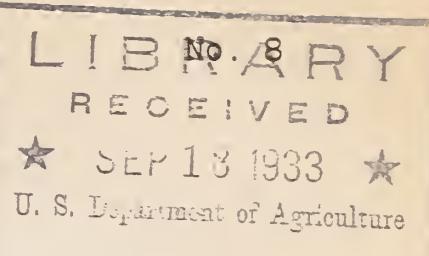
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August, 1933



## THE BLISTER RUST NEWS

Issued by the Division of Blister Rust Control and  
the Cooperating States

CONTENTS

	<u>Page</u>
A Ribes Eradicator from Europe .....	130
Abbreviated Leaflets Used in Blister Currant Elimination Work .....	125
Agent Doore of Massachusetts Makes Good Use of the Press .....	137
Agent Roop Meets with the Amesbury (Mass.) Rotary Club .....	130
Blister Rust Control Activities in District #9, New York .....	131
Blister Rust Control Necessary .....	128
Blister Rust Found on White Pine in Virginia for the First Time .....	125
Blister Rust Specimens Collected for the Massachusetts Institute of Technology .....	132
Control Work in Rhode Island During July .....	134
Dutch Elm Disease Spreads to New York State .....	133
Emergency Conservation Work Camps in Pennsylvania .....	135
Infection Found on <u>Ribes triste</u> in Houghton Lake State Forest, Michigan .....	133
Lantern Slides Showing White Pine Weevil Available at Washington Office .....	132
Notes from Various States on Progress of Blister Rust Control Work Under the Civilian Conservation Corps Program .....	126
Progress Report on C.C.C. Blister Rust Control Work .....	131
Public Works Funds for Blister Rust Control .....	124
Publications .....	137
Some Comments Re CCC Enrolled Personnel .....	133
Summary of the Viewpoints of Various European Investigators as to the Importance of <u>Cronartium ribicola</u> .....	129
Ten ECW - BR Control Crews Organized in the Berkshires, Massachusetts .....	135

U. S. Department of Agriculture  
Bureau of Plant Industry  
Division of Blister Rust Control  
Washington, D. C.

PUBLIC WORKS FUNDS FOR BLISTER RUST CONTROL  
S. B. Dwtwiler

The Administrator of Public Works, on August 10, approved an allotment of two million dollars for white pine blister rust control on State and private lands. These funds are from the appropriation made available by the National Industrial Recovery Act under the provision for conservation of natural resources. The money is for control work on State and private lands and therefore will be administered by the Bureau of Plant Industry. The rules prescribed by the President, as given in Circular No. 1 of the Federal Emergency Administration of Public Works include the following statements:

"The purpose underlying the entire scheme is, as stated in the declaration of policy of the Recovery Act, 'to increase the consumption of industrial and agricultural products by increasing purchasing power, to reduce and relieve unemployment, to improve standards of labor, and otherwise to rehabilitate industry and to conserve natural resources'.

"The formulation of a comprehensive plan of public works thus requires consideration of the functioning of the national economy as a whole. This, in turn involves consideration of ascertained trends of population and industry, its centralization and decentralization, changes in the habits of the people caused by the substitution of the machine for human labor, the automobile, changes in railroad rates, in charges for electric current, the effect of massive projects like Boulder Dam, Tennessee Valley, and the St. Lawrence River improvement.

"The formulation of the immediate comprehensive plan (which is necessary to provide employment quickly) involves the formulation of a long-range national plan to follow and be consistent with the immediate plan. To that end the President has directed the creation of a long-range planning board more particularly described later.

"Obviously the purpose of the act to provide employment quickly cannot await the complete formulation of the comprehensive program. But it is possible to select projects which will be consistent with such program when formulated."

Because of the serious emergency due to blister rust that exists in Idaho particularly, it is expected that about 500 additional men will be put into the control camps this week to supplement work now in progress. Work in other States will be organized as rapidly as possible but the season in many states is already so far advanced, due to drouth, that only a relatively small number of men can be employed for the remainder of this season. The major part of the task will need to be accomplished next year and an increase in employment will be begun as early in the season as seasonal conditions in the different areas will permit of effective work.

ABBREVIATED LEAFLETS USED IN BLACK CURRANT ELIMINATION WORK  
W. T. Roop, Mass.

In the conduct of black currant elimination work, there has always been a difference of opinion as to how much time should be devoted to informing local residents regarding our activities. Needless to say if our inspectors stop to ring every door bell and tell our story to whomever comes to the door, the time required to carry out the work would be greatly increased, with resultant higher cost. On the other hand, if we enter a property and make our examinations with no pretense to inform the owner or occupant of the house as to the nature of our errand, we would encounter no end of criticism. In the northeastern district in Massachusetts we have tried to compromise in a way and have followed a plan whereby we leave at each house a copy of one of the small abbreviated blister rust leaflets. This publication, to be sure, does not inform specifically of our particular errand, but it does give owners some knowledge of our purpose on the property. We find that these leaflets very adequately inform the average owner regarding blister rust and its control, and in that way perform a very much worth while service, at what is most important of all, an extremely low cost. It would be better, of course, if we could have a similar sized and planned leaflet bearing entirely on the black currant problem, but lacking this we are following the next best procedure and find that it is successful and apparently adequate.

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BLISTER RUST FOUND ON WHITE PINE IN VIRGINIA FOR THE FIRST TIME  
Roy G. Pierce

While the blister rust has been found in Virginia on currants and gooseberries since 1931, the disease had never been found on white pine until the present month. Mr. E. H. Francis, in charge of the Ribes eradication work in the Shenandoah National Park, found the rust on one white pine near the Skyline Drive between 10 and 15 miles south of Thornton Gap. Later in the month the writer turned up the rust on a number of wild gooseberries, Ribes rotundifolium, in the area from which the Ribes were being eradicated along Skyline Drive. Mr. Francis has five crews at work on Skyline Drive.

Mr. W. J. Cullen, formerly in blister rust work in New Hampshire and now engaged in this work for the George Washington National Forest, found the blister rust on white pine and nearby Ribes on August 7, on North River above Stokesville. Since that date he has found the rust on white pine in two other places, about ten miles apart, on North River. Mr. Cullen has two crews at work in this North River area carrying on reeradication. The oldest infection which Mr. Cullen found dates back to 1924 as near as could be made out.

NOTES FROM VARIOUS STATES ON PROGRESS OF BLISTER RUST CONTROL  
WORK UNDER THE CIVILIAN CONSERVATION CORPS PROGRAM

Michigan

There are 19 State and 9 Federal Civilian Conservation Corps Camps in the Upper Peninsula of Michigan. To date (August 13) blister rust control work is being carried on in 8 State and 4 Federal camps, employing a force of about 100 C.C.C. boys from the former and 75 from the latter. These boys are grouped in crews consisting of five men and a foreman, all from the Civilian Conservation Corps, and crews working out of one camp are under the general supervision of a blister rust checker whose duty it is to train the boys, keep them working on pine areas to be protected and to check after them to insure quality work being done.

We have found that where the crews are kept moving lively they get a spirit in their work which makes things interesting for them and that time passes much more quickly. When a blister rust crew really "clicks" the boys enjoy the work and many say that they would rather do eradication work than anything else. It all depends on the foreman and checker in charge.

Only a small percentage of the men from each camp are assigned to blister rust (about 10%). Since the camps are definitely located and there are no side camps the time consumed in travel is considerable. During the dry season when forest fires are prevalent much of the time is spent in fire-fighting. We have 10 blister rust checkers in the field. On an average each checker supervises the work of about 20 C.C.C. boys.

J. K. Kroeber, August 13.

Connecticut

C.C.C. work is progressing satisfactorily this month (July). I have done considerable checking in the last few days and find that the quality of the work accomplished is high and that we are making progress in increasing our acreage per man day.

The following data covers the blister rust control work of the Civilian Conservation Corps in Connecticut up to and including July 31:

Acreage eradicated	9,451 $\frac{1}{2}$
Ribes destroyed	93,162
*Man hours in field	35,827
*Man hours eradicating Ribes	29,103

\* Does not include time of technical foreman and checkers.

J. E. Riley

Maine

Mr. Frost reports Ribes eradication from four C.C.C. State camps in Maine for June and July as follows: Acreage worked 9,863; Ribes pulled 40,583; man hours spent in eradicating Ribes 30,627.

E. C. Filler, August 9.

Vermont

There are 84 men from the Civilian Conservation Corps engaged in the work of eradicating Ribes in Agent Bradder's district in Vermont. These men are working out of three camps; Camps Coolidge, Aitken and Danby, Vermont. There is a small acreage of white pine in the Coolidge State Forest and the work of protecting this has been completed.

From Camp Aitken, which is a Veterans Conservation Camp, there are 50 men pulling Ribes in the Proctor and West Rutland areas. Two experienced men are directing the work of this unit. A blister rust exhibit was placed in this camp for the benefit of the men and visitors.

There are about 200 young men at the Danby camp, chiefly from the State of Vermont. Agent Bradder has 26 men in three crews engaged in reworking the pine areas in the town of Arlington. Most of the Ribes are small and such as might have come in since the initial work was done. It was found that one of the crews was missing large bushes due to the fact that they did not know how to find Ribes in thick brush. The men were brought back and shown how to find bushes in such places. A short time after, one of them was heard to say. "I bet they don't find any more bushes behind me." The morale of these men is excellent and they are good workers. There is one technical man and one squad leader in this unit and three foremen; all except the technical man are C.C.C. men.

The following figures show the number of C.C.C. men engaged in blister rust work in Agent Bradder's district in Vermont, also the number of Ribes pulled, man hours, acres covered and the total cost up to July 28:

Total number of men used	84
Total number of man hours	3,230
Total Ribes pulled	10,747
Total acres covered	1,060
Total cost of eradication	\$1,073.50

L. W. Hodgkins

Idaho

Approximately 7,000 men, representing 35 camps of Civilian Conservation Corps men, now occupy the front line trenches in the battle against the white pine blister rust. This force is divided into three armies, one in the Clearwater region, one in the Elk River-St. Maries region, and one in the Coeur d'Alene region. The season's welfare is now at its height, and important successes are being gained by the conservation forces.

The camp units of the Civilian Conservation Corps first started to enter the north Idaho area late in June. By early July they were all in place. For a brief period of time there followed the necessary details of camp construction and the training of the men for their work. Day by day, however, as camp construction neared completion and the men learned the nature of their new duties, larger and larger numbers of them were placed in the field for blister rust control work. The number of men available for blister rust control work in the last five working days of July on the Elk River-St. Maries area ran from 106 to 158, with an average of 132.

From the time of their arrival in north Idaho until the last of July the Civilian Conservation Corps men had worked over approximately 50,000 acres of white pine bearing lands. During this period nearly eight and one-half million Ribes bushes had been uprooted by hand. This number is in addition to countless others which were killed by the application of toxic chemical sprays, and which grow in such profusion in the stream bottoms that they are not counted. It is yet too early to determine with any degree of accuracy the headway that will be made over the entire season. It seems safe to estimate, however, that at least as much more area will be covered before snow drives the workers from the mountains and that the end of the season will see the completion of this protective work on more than 100,000 acres.

Blister rust control work can be continued in the Idaho white pine forests until the Ribes bushes are defoliated and are thereafter difficult to distinguish from other bush species. Following this time the men in the Civilian Conservation Corps camps will be assigned to other activities pertaining to the development and protection of the forests.

S. N. Wyckoff, Aug. 11.

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#### BLISTER RUST CONTROL NECESSARY

(Extract from the Berkshire (Mass.) Courier, Aug. 3)

Persistent Effort on Part of Landowner is Required if Stand of Timber is to be Saved from Destruction - Reexaminations Now in Order Locally.

The initial destruction of Ribes on a white pine area removes the larger bushes, and if this work is well done it will give protection to the trees for five or more years. However, some of the small Ribes may be overlooked, sprouts may develop from improperly removed crowns, and seeds in the soil produce new plants under certain conditions. After several years of favorable growth conditions, these plants and sprouts become a menace to the pine and should be systematically destroyed. In other words, areas need to be periodically reexamined for Ribes. Usually five years can safely elapse before it is necessary to again search and clear away any persisting Ribes. Unless delayed too long, the cost of reworking an area is generally much less than that of the original protective work. One or two reworkings of an area are ordinarily sufficient to protect the pine to maturity.

In Southern Berkshire County especially, conditions are such that reexaminations of white pine areas are imperative now in order to prevent the blister rust disease from gaining another foothold. Because of these conditions special effort will be made this season to assist pine owners in Alford, Great Barrington, Monterey, New Marlboro and Sheffield.

Many requests have been received for reexaminations during the past year or so. In 1932 a concerted effort was launched to carry on the work in several towns. A brief summary of this work to date shows that 238 private owners cooperated in reexamining 28,500 acres of land in protecting 11,000 acres of pine. Approximately 144,000 currant and gooseberry bushes were found and destroyed. Cooperative application of control measures have been very successful and the blister rust has been held in check temporarily, due primarily to the splendid cooperation of pine owners. The problem now is to see that the status of control is maintained by promptly making all needed reexaminations. \*\*\*

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SUMMARY OF THE VIEWPOINTS OF VARIOUS EUROPEAN INVESTIGATORS  
AS TO THE IMPORTANCE OF CRONARTIUM RIBICOLA

R. M. Lindgren, Asst. Pathologist, Forest Products  
Laboratory, Madison, Wisconsin.

The opinion of the majority of European investigators visited is that the white pine blister rust must be considered as a limiting factor in the growth of Pinus strobus in Europe. Heavy disease occurrence was reported in old as well as young trees and Ribes eradication seemed out of the question because Ribes means more to the European than does the pine. Professor Tubeuf, at Munich, is one of those who believes P. strobus is doomed and he has suggested to the foresters that they cease planting it and try such resistant species as P. peuce.

Among the foresters there seems to be considerable divergence of opinion as to the future of white pine. Some were convinced that it was useless to attempt further planting work with the susceptible species of white pine. In Switzerland, for instance, the use of white pine has been dropped from their planting programs entirely. Other foresters are not in accord with the pathologists in condemning P. strobus entirely. While admitting that the tree is very susceptible to the Ribes disease, some feel that it might be successfully planted and grown under certain conditions. In addition, it is maintained by some of them that the use of P. peuce involves a risk also, since a number of cases of the disease have been encountered recently in this species, indicating that it may not be as resistant as some of the pathologists have claimed it to be. In Bavaria, particularly, there seemed to be conflicting thought between the foresters and the pathologists in regard to this matter of possible future of P. strobus and P. peuce in Europe.

AGENT ROOP MEETS WITH THE AMESBURY (MASS.) ROTARY CLUB  
(Extract from Newburyport Daily News, July 7)

Amesbury, July 7 - Local Rotarians learned about the problems created by forest diseases and how the public can cooperate in solving them, at their weekly luncheon in Sunnyridge Inn yesterday noon, when they were addressed by William T. Roop, District Agent for white pine blister rust work employed by the Federal and State Departments of Agriculture.

Mr. Roop and his crew have been working with us for more than two months in eliminating the causes of blister rust and in treating trees which have already become infected. Much of the work has been done in the Powow Hill Section.

Mr. Roop declared that trees are the oldest known organisms in the world. Despite this fact he said the people are slow to realize their importance. America for example, has witnessed the rapid disappearance of one of its most valuable economic trees, the American Chestnut, which has vanished from this section. Because of its rapid growth and prompt maturity into a state which made its timber useful for the manufacture of railroad ties, this tree was especially important the speaker pointed out.

Mr. Roop spoke of his work here eight years ago in the control of the pine blister rust. He said that his present visit was for the purpose of checking up on the results of that work and of eliminating subsequent causes of blister rust. This has included the uprooting of currant and gooseberry bushes which causes the rust to communicate with pine trees. The blight, he explained, never spreads from pine to pine, but always from one of the above-named bushes.

"In this town", the speaker declared, in answer to a query put to him in a Q. & A. period which followed the talk, "You are not safe in any district from ravages of the pine blister rust, due to the prevalence of so many blight-spreading currant and gooseberry bushes. Caution must be taken to keep such bushes permanently eliminated from all parts of Amesbury."

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A RIBES ERADICATOR FROM EUROPE  
G. A. Root, Calif.

To the surprise of several blister rust men, there appeared in an Indiana contingent of C.C.C. boys, assigned to a Stanislaus Forest Camp, a former resident of Czecho-Slovakia who had done eradication work in that country. From a short interview with the fellow, it was gleaned that this work was done to protect some 5-needle pine plantations. He said there were fewer wild Ribes there than here, but this remark was not particularly surprising inasmuch as he was now working in an area, his first assignment, where the bushes ran 1,500 to the acre. Further questioning might have brought out some interesting sidelights on the blister rust situation in that part of Europe.

PROGRESS REPORT ON C.C.C. BLISTER RUST CONTROL WORK  
S. B. Detwiler

On August 9, 11,901 men in 208 C.C.C. camps located in 22 States were engaged in blister rust control. Approximately 150,000 acres had been cleared of over 12,000,000 currant and gooseberry bushes during June and July, representing a total of about 150,000 man days of labor.

All reports indicate great improvement in the work of the camp crews gradually developed during July. In most camps the crews were only getting started early in July. It required three to five days to train the crews; after that the work done was of surprisingly high control efficiency but the acreage covered during the formative period has been low. In general, the reports show that the crews clear from one-third to one-half of the acreage per man day that is cleared by the regular crews. This is partly due to the shorter working week but mainly to lack of trucks to transport men to work. It has not been uncommon for crews to walk five miles from camp to begin work.

Most of the organization difficulties now have been overcome; the men have developed interest and physical stamina and the supervisory forces are generally enthusiastic over the outlook for creditable accomplishment.

The men are interested in the control work. Mickie De Marteau, Company 1764, Camp S-100, Park Rapids, Minnesota, writes: "I surely believe blister rust control is one of the most educational jobs in any line of C.C.C. One has to understand thoroughly the ways of the immense forests and has to be alert. A man cannot go into the forest with an idea of making it a playground while at work. I have learned a lot while I was in the timber hunting Ribes. I have been in the Boy Scouts of America which was very interesting, but not as interesting as blister rust control."

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BLISTER RUST CONTROL ACTIVITIES IN DISTRICT #9, NEW YORK  
C. B. Kresge, N. Y.

Blister rust control work in this district, comprising St. Lawrence and Jefferson Counties, New York, is limited to a large extent to scouting natural pine stands, plantation inspection, and Ribes nigrum elimination.

The control season began May 8 with the assignment of four foremen to the six townships in St. Lawrence County not completed in 1932. After the work in these townships was finished two foremen were assigned to carry on the black currant elimination work in the city of Ogdensburg, while the other two foremen extended their activities into townships of Jefferson County.

At the close of the 1932 field season a hasty survey was made of the black currant situation in the city of Ogdensburg, and it was estimated that there would probably not be more than 300 bushes found and the work could be completed in about two weeks with two men. However, when the work began we realized that this estimate was extremely low. It took two foremen with a truck approximately six weeks to remove 974 Ribes nigrum

from city gardens. There were 228 owners with an average of about four bushes to each owner. Most of these plants were deeply embedded in a clay soil and were extremely hard to uproot. Cooperation among city officials was poor. Nevertheless only 17 bushes, distributed among three owners, remain in the city. Some further action must be taken to remove these plants for the owners are very antagonistic and local police protection cannot be secured.

One of the outstanding projects of the season was the eradication of Ribes on seven Jefferson County Reforestation Areas comprising approximately 2,000 acres. The crew and scout method was combined on these areas, using one county man with the State foreman all the time and a four-man crew furnished by the county when necessary.

Protection of the New York State Ranger School property at Wanakena by the Conservation Corps personnel began July 24. The work has been greatly retarded by the delay in securing transportation facilities, but we expect to have five crews in the field this week.

Despite the setback due to the length of time required for the black currant elimination in the city of Ogdensburg, we hope to complete the season with an eradicated acreage closely approaching that of 1932.

(August 10, 1933)

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LANTERN SLIDES SHOWING WHITE PINE WEEVIL  
AVAILABLE AT WASHINGTON OFFICE

H. T. Wright

We have been able to secure some lantern slides of the white pine weevil from the Division of Forest Insects, Bureau of Entomology. These have not been distributed widely to the blister rust agents, perhaps because they are not aware that they are available. Mr. Frost, to whom we loaned one of these slides, states that he considers the weevil slide a very good one and that he wants one for his permanent collection. Many pine owners may confuse weevil injury with the injury from blister rust so it is desirable to show the slides in order to give the facts in the case.

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BLISTER RUST SPECIMENS COLLECTED FOR THE MASSACHUSETTS  
INSTITUTE OF TECHNOLOGY

S. H. Boomer, N. H.

Blister rust specimens for the Botany Department of the Massachusetts Institute of Technology were recently collected by Raymond Bryant, foreman in District #4, New Hampshire. Trunk and branch cankers in the aecial stage, as well as infected leaves of several species of Ribes, were selected.

The collection was made through the suggestion of John Fuller, Instructor at the college.

SOME COMMENTS RE CCC ENROLLED PERSONNEL  
C. C. Perry, Mass.

In recent weeks I have gleaned some unsolicited comments regarding the morale of the CCC enrolled personnel. These seem worth while repeating below.

\*\*\*\*\*

A Massachusetts agent writes: "My brief association with these camps has been nothing but pleasant. The leaders are a fine lot of high type men and the enrolled men are responding with a will to the difficult tasks allotted them. These camps, to my mind, are doing two things. First, they are allowing men to retrieve that almost lost desire for an opportunity to work. Secondly, they are the means by which our State forests can be developed properly and to a degree to which they never have been and probably would not be for some time to come."

\*\*\*\*\*

Another Massachusetts agent comments, "The ECW men are working out much better than we expected. The cooperation accorded us by the camp superintendents and army officials has been excellent."

\*\*\*\*\*

In casually talking with one of the supervisory personnel at one of our Massachusetts camps, the following unsolicited remark was made. "The best men in the camp have certainly been selected for your blister rust control work."

\*\*\*\*\*

In one camp two men have expressed a desire to go to a forestry school and have appealed to the captain for a chance to get on the blister rust crew.

\*\*\*\*\*

In one of the veterans (BEF) camps our blister rust checker makes the following comment: "I have never seen men so eager to work, even when weather conditions are not particularly suited for work in the brush, these men will go anywhere I tell them and like it, too. When a man is recalled to pull a missed bush, the comment is very often 'How in \_\_\_\_\_ did I miss that one'."

- - - - -

INFECTION FOUND ON RIBES TRISTE IN HOUGHTON  
LAKE STATE FOREST, MICHIGAN.

R. I. Thompson, Mich.

An infection on the leaves of Ribes triste was recently found by Mr. Robertson on the Houghton Lake State Forest in Michigan. This was only a slight infection and Robertson is to be complimented on being able to detect it. This is, I believe, the first infection of any sort that has been reported on the State Forest. So far no pine has been found diseased.

CONTROL WORK IN RHODE ISLAND DURING JULY

A. W. Hurford, R. I.

No blister rust control work is being done in the field other than that which is being carried on as part of the emergency conservation program. Approximately 60 men working in 10 crews are carrying on control work through the scouting for and eradication of Ribes in woodland areas. This work is being carried on from Emergency Conservation Camp #52 in Gloucester, and Emergency Conservation Camp #53 in West Greenwich. Work from each camp is being supervised by two foremen, making a total of four emergency conservation foremen in the State. Mr. A. C. White is acting as agent for the State, supervising this work under the direction of the State Leader in blister rust control.

Approximately 303 acres of woodland were scouted in Gloucester during July and 208 Ribes were found and destroyed. The number of men on the work in this town averaged about 26 men per day. During the last week of the month the crews were running at full strength with a total of thirty men. The men worked 365 man days in Gloucester and covered an average of .83 acres per man day. Few bushes were found but because of the many swamps and dense underbrush progress was slow. The work is being carried on by stripping the woodlands in close formation, five men in a line with an enrolled foreman checking in the rear. It has been impossible to widen the formations much as yet because of woodland conditions in the district and because the men are not as yet qualified to take greater responsibilities. Slow progress is being made, however.

The men working in West Greenwich scouted a total of approximately 200 acres during July. No Ribes were found. The work did not start in this town until the tenth of the month. Crew leaders were trained and the crews were instructed in the work from the tenth to the twenty-fourth of the month, and a little scouting was done during this period. Field work with full sized crews did not start until July 24. The crews are working very well considering the short period of time on the work. A total of 217 man days work was carried on from this camp during July with an average of .92 acres per man day.

Approximately 700 acres have been scouted in different parts of the State since emergency conservation work began. This includes a little work which was done in the Burlingame Reservation, a state park in Charlestown. Work will be carried on during August and September with full-size crews unless some unforeseen emergency prevents this. An attempt will be made to increase the progress of the work to obtain greater acreage and more efficiency. At the present time the greatest value of this work has been from the educational standpoint, chiefly instructing so many local men on blister rust control, and through the publicity given the project. With two months to go, however, during the present season we should obtain fairly satisfactory results before the work is discontinued for the year. It is of interest to note that the foremen in checking the work of the enrolled men have found that they are missing few Ribes.

EMERGENCY CONSERVATION WORK CAMPS IN PENNSYLVANIA  
R. P. Fatzinger, Pa.

By the end of July all the E.C.W. camps to be placed on State-owned lands in the State had been established. Eighty four camps have been established on the lands of the Department of Forests and Waters and five camps on land of the Game Commission. The project reports for the Game camps do not call for blister rust control work; however, it is expected that some of this work will be done by these camps. Of the 84 camps on State forest lands, the project plans of 59 camps call for the eradication of Ribes on about 133,000 acres with an allowance of over 7,700 man months to do this work. The above figures include 300 man months and 7,000 acres to be worked for Ribes by the men at the State Park camp established on the Cook State Forest Park in Forest County. In addition to these 59 camps, some eradication work has been carried on with men from 12 other camps where the project plans did not originally call for blister rust control work. The remaining 13 camps are located so that there is very little or no white pine in the vicinity but in case any such areas are located by the blister rust checkers it is intended to carry on the necessary eradication work with the men from these camps. A large part of this acreage will be covered during the present eradication season but quite a little will remain to be done next year, as these projects are based on a two-year period and the men's time allotted accordingly.

During the past month a great improvement has been apparent in the work being done by the camp crews. The men have developed more interest in the work and have also greatly increased their efficiency both in speed and quality of work. The reports received from the field up to the present time show that it was necessary to rework only one area during the past month.

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TEN ECW - BR CONTROL CREWS ORGANIZED IN THE  
BERKSHIRES, MASSACHUSETTS  
G. S. Doore, Mass.

A total of ten crews and foremen selected and developed from the Civilian Conservation Corps Camps have been organized and in operation for at least a part of July. The training of these 60 to 80 men has been a tedious job but they are now in shape to turn off quality work in greater quantities. During the month they cleared 24,900 wild Ribes from 1,100 acres of land, nursery sanitation at the Erving State Forest included. Species of Ribes encountered by the crews are: wild Ribes - cynosbati, hirtellum, triste, lacustre and glandulosum; cultivated Ribes - vulgar and odoratum. The men are interested in their job and loyal to their crew. Several crews have expressed a desire (in no uncertain terms) to continue eradication work during rainy days rather than work about camp.

Keeping the men interested in the work has been a feature. Every crew has heard from one to three talks on the rust, several displays have been set up to which the crews have added material collected by themselves. The Savoy, Massachusetts crews have a garden of wild Ribes at camp. Ample bulletins have been provided all men while the more technical material may be found at the recreation buildings. Riker mounts are on display. Each

foreman has received a copy of the "Manual for Field Men" prepared by State Leader Perry. Two men have expressed a desire to attend a forestry school when cash is available. A stereomotoroscope showing 25 colored slides of the rust and methods of control will be operated in every camp where electricity is available.

August will be the first full month's work for the full quota of crews in Berkshire and Franklin counties. From now on we expect to show real results.

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DUTCH ELM DISEASE SPREADS TO NEW YORK STATE

R. Kent Beattie,  
Division of Forest Pathology

The Dutch elm disease has reached New York State. Seven elms, proved to have the Dutch elm disease, have been found on Staten Island; one in Brooklyn, one at Lynbrook, and one at Port Washington on Long Island; and one at Rye in Westchester County.

In New Jersey the number of authenticated Dutch elm disease infected trees has increased from 69 to 32 since July 3. All are located in a 15-mile strip west of the Hudson River and New York Harbor extending from Paterson to New Brunswick, New Jersey. Altogether 323 infected trees have been found in the general vicinity of New York City.

In Ohio only nine infected trees have been found; three in Cleveland in 1930, four in 1931, none in 1932, and one in 1933; and one tree in Cincinnati in 1930.

Scouting in New Jersey and nearby New York is being pushed and lines are being run in various directions to determine precisely the limits of the infection. Where opportunity offers, elms are being examined in other parts of the country. Federal, State, and local authorities are cooperating. But it is manifestly impossible for the Dutch Elm Disease Scouts to cover all the elms in the United States in the few weeks that will now elapse before autumn leaf discoloration interferes with recognition.

Blister Rust Control Scouts everywhere are therefore urged to watch elms for wilting or yellow or brown leaves accompanied by brown streaks in the young wood. When this combination is found, send pieces of the infected twigs as big as a lead pencil to the Dutch Elm Disease Laboratory, care Experiment Station, Wooster, Ohio; or communicate with the Dutch Elm Disease Office, care Shade Tree Commission, City Hall, East Orange, New Jersey, telephone Orange 3-4100.

Not all sick elms have the Dutch elm disease. Specimens must be cultured to determine the cause of the malady.

U. S. Department of Agriculture Circular 170-C, entitled "The Dutch Elm Disease," gives detailed information in regard to this disease.

August 22, 1933.

AGENT DOORE OF MASSACHUSETTS MAKES GOOD USE OF THE PRESS

Agent G. S. Doore of Massachusetts has recently sent in to this office a series of newspaper articles on blister rust which show that he has been making good use of the press. These articles, which appeared in local Massachusetts papers during the first part of August, describe in an interesting way life at the Civilian Conservation Corps camps and the work that is being accomplished in controlling blister rust in the Southern Berkshires. An extract from one of these articles, which appeared in the Berkshire Courier for August 17, is given below:

"C.C.C. Boys at Otis Camp

Men are Under Excellent Discipline at Mountain Camps  
and are Profiting by Their Experience.

"To the 181 men enrolled at Civilian Conservation Corps Camp 53 in Otis, liberal educations in self-subservience and the crafts are being dealt. \*\*\* The forestry crews, and each of the nine civilian foremen in charge, are given specific instruction relative to the day's work by Superintendent Wellington before they leave the camp. Their major tasks at present are to improve the roads through the locality in which they are interested, and to cut and make passable for trucks, "fire lanes" through the forest.

"Between 300 and 400 acres of State forest have been eradicated of wild currant and gooseberry bushes as a preventative of the spread of white pine blister rust. Mr. Wellington has infected pine specimens, charts and maps upon which he lectures to the boys. Conspicuously infected pine trees in a 20 acre lot are being cut and burned. Later in the season G. Stanley Doore, blister rust agent in Berkshire and Franklin Counties, will arrange to have the men instructed in identifying and saving trees that have just become infected with the disease. Similar work is being accomplished by the C.C.C. camps within Mr. Doore's jurisdiction at Beartown, Savoy, Sandisfield and Erving."

Mr. Doore, in commenting on the above article, states: "It will be noted that Mr. Wellington, Camp Superintendent, has been supplied with educational material. He is a forester with one year's experience on the rust in Maine and well able to talk to the boys. However, the regular crews on control work received rust talks before starting eradication work and have heard from one to two talks from your agent since taking an active part in the project. The camp officials have cooperated with us 100%."

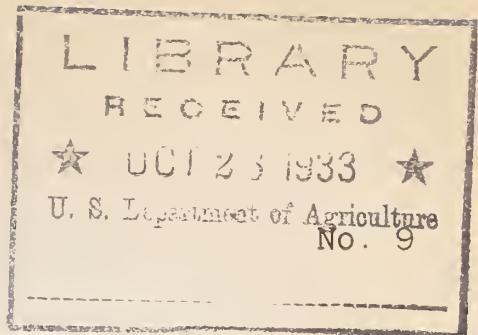
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PUBLICATIONS

Taylor, Dr. Wm. A. - Research in the Bureau of Plant Industry. The Scientific Monthly, July 1933. One page in this article is devoted to the white pine blister rust.

Ritter, L. B. - An Undesirable Alien - Blister Rust. The Minnesota Conservationist, May-June, 1933.





## THE BLISTER RUST NEWS

Issued by the Division of Blister Rust Control and  
The Cooperating States

## CONTENTS

	Page
A Suggestion on Map Making From Maine.....	146
Blister Rust Control Progress Under the N.R.A.....	139
Blister Rust Found on <u>Ribes oxyacanthoides</u> L.....	147
Blister Rust Invades the Cloquet Forest in Minnesota.....	148
C.C.C. Blister Rust Work in New York .....	143
C.C.C. Boys Fight Rust and Fires in Michigan .....	146
C.C.C. Chips on the Clearwater .....	144
C.C.C. Educational Program Brings Profitable Results .....	144
Difficulties in Ribes Eradication Work .....	152
Forest Supervisors in the South Support Blister Rust Program.....	150
Important Blister Rust Find in Virginia.....	140
Large Crews Used at Superior, Wisconsin Under the N.R.A.....	149
Massachusetts off to a Good Start.....	140
New Counties Found Infected in Wisconsin .....	148
New York Boys and Control Work in St. Joe National Forest, Idaho.....	145
Notes from the C.C.C.....	141
Pine Scouting in the Great Smokies .....	152
Problems of Scouting in Virginia.....	151
Publications.....	153
Suggestions from the Lake States on Checking Blister Rust Eradication Work.....	149
Summary of ECW-BRC Work in Massachusetts.....	142
Use of Air Mail.....	153
White Pine Blister Rust Control Situation on Cherokee National Forest.....	150
Who Can Beat this Record?	147

U. S. Department of Agriculture  
Bureau of Plant Industry  
Division of Blister Rust Control  
Washington, D.C.

BLISTER RUST CONTROL PROGRESS UNDER THE N. R. A.  
S. B. Detwiler.

Work is well underway in a number of States on eradication of Ribes as part of the blister rust control work under the N.R.A. program. By September 16 some 1832 men had been placed at work and 37,796 man-hours of work accomplished. Work spread included areas in 13 States with a final quota for fall operations of 1946 men. The greatest number of men are employed in California, Idaho, Pennsylvania, Vermont and Maine, at this date (September 16). Other States where work has begun are: Massachusetts, Connecticut, Rhode Island, Michigan, Wisconsin, Ohio, Oregon and Maryland.

The lateness of the season and early fall of Ribes leaves will modify the work program somewhat after the middle of September. State leaders are planning preeradication surveys, scouting and mapping so that eradication programs can start in full swing in early spring.

In New Hampshire, Wisconsin and Minnesota preeradication work to develop large scale plans will be done this fall and winter preliminary to large scale cultural operations next season.

In Maine the blister rust control work is located in the vicinity of Rockport, Union, Lincolnsville, Camden, Belfast, Swanville, Winterport and Bangor.

In California 425 men were employed between September 11 and 17 in camps in the Stanislaus National Forest. Work conditions are reported as still normal and labor turn-over has been light. W. V. Benedict, Assistant Forester reports: "All camps are manned to the limits of our equipment. Camps are located in areas where Ribes are abnormally heavy. These locations were made in order to enable the camps to operate later in the season than would be possible in areas of fewer Ribes."

NIRA camps were established by the Bureau of Plant Industry in the St. Joe and Clearwater Districts of Idaho on August 24. At present 582 men are employed in these camps, averaging one and one quarter acres cleared of Ribes per man-day. Work is limited to areas having concentrations of Ribes, an average of 325 bushes being pulled per acre. Early in September the Forest Service put 623 men on blister rust control work in NIRA camps on the Coeur d'Alene National Forest. Two Bureau of Plant Industry NIRA camps have been established in the vicinity of Prospect, Oregon, in a sugar pine-western white pine area, with 42 men employed.

Detailed plans for NIRA blister rust work in the Southern Appalachian States will be developed this fall and winter. Crews are at work eradicating Ribes in Western Maryland on areas which could not be reached from C.C camps. The major project this year will be reconnaissance work in preparation for eradication work next season.

MASSACHUSETTS OFF TO A GOOD START  
C.C. Perry, Mass.

Plans for emergency NIRA-BRC work in Massachusetts dovetailed with precision, and we were able to have two crews at work in the field on Thursday, September 7, following the receipt on the morning of September 5, of definite telegraphic instructions to proceed. By Monday, September 11, we had 78 previously unemployed crew men at work, under the direction of 8 foremen.

In the matter of securing transportation facilities which seemed to be our chief difficulty, we have been fortunate in keeping well within the maximum reimbursement allowed. In fact, we have been able to secure transportation gratis from towns in two districts. In a third district the men employed have been sufficiently interested in securing work to arrange among themselves adequate means of reporting at the point of work each day.

It is problematical how long *Ribes* foliage conditions will permit the continuance of effective field work, but in the present circumstances, every little bit of employment made available will undoubtedly help.

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IMPORTANT BLISTER RUST FIND IN VIRGINIA  
W.J. Cullen, Virginia.

On September 12th, a significant infection area of blister rust was found in George Washington National Forest above Camp Todd on the North River. This area consisted of 1.5 acres and is the only one known on the forest and is the largest spot known in Virginia.

The following information is of interest:

No. of pine on plot - - - 40  
No. of pine infected- - - 23  
Percent infected- - - - 57.6  
Year of oldest infection 1924  
Year of youngest infection 1928

Ribes found:-

11 infected *Ribes cynosbati*, 2-4 feet in height.  
Predominating tree species on plot - hemlock.  
Percent white pine on plot - 6.  
No. white pine seed trees - 7.  
Age of pine - 10-40 years.

This infection area is evidence that the rust is moving southward into the heart of the Southern Appalachian region.

NOTES FROM THE C.C.C.

Major Stuart terms the white pine blister rust the most serious tree disease now threatening the forest resources of the Nation. He states that it has spread throughout the commercial range of western white pine, through northern Idaho and through western Montana, even faster than was anticipated. He added that it represents a very grave danger to the future prosperity of that region. To combat this disease, the men are digging out gooseberry and currant bushes, carriers of the scourge.

It is estimated that blister rust control work will be undertaken on 6,188,574 acres throughout the country. Of this amount, 265,200 acres will be in State Parks and 110,000 acres in Indian Reservations.

(Extract from press report, Office of the Director, Emergency Conservation Work. July 23, 1923).

\* \* \* \* \*

J. E. Riley reports that blister rust talks are given every Thursday night to C.C. camps in Connecticut. Daylight screens and projector have proved very useful.

\* \* \* \* \*

At Sharon Camp, Vermont, Ribes eradication has been in progress since July 6 with a maximum of 48 C.C.C men under the direction of F.E. Smalley and three technical foremen. Up to August 26, the work had been confined to State lands in the towns of Sharon and Thetford. A total of 30,305 Ribes had been removed from approximately 860 acres requiring 4,595 man hours of labor or 5.3 man hours per acre. Considerable of this work was in swampy areas which were very difficult to eradicate.

Three C.C.C camps have operated in the Rutland District of Vermont this season. One crew of 10 men from the Plymouth camp worked on State lands in that vicinity for five days in July. Prior to August 18, from 24 to 48 men were assigned to eradication work from the Veterans C.C. at Rutland to work on state and private lands in Mendon, Proctor and West Rutland.

K.K. Stimson,

\* \* \* \* \*

Two crews have completed Ribes eradication work to protect the white pine plantations on the Calvin Coolidge Forest at Plymouth, Vermont. Mr. Coolidge personally gave the State Forester permission to name this forest after him.

\* \* \* \* \*

Green, blister rust checker in Ohio, reports very satisfactory results from 12 blocks where eradication methods have been undertaken. Up to September 2, 433 acres were cleared of 18,918 Ribes at a cost of 2,882 hours of man labor, with an average of 44 Ribes bushes and 6.7 hours of labor per acre.

Preeradication surveys are under way in Indiana. Blister rust agents scouting over the largest white pine plantations in the States, those in Ripley and Jennings Counties, report an abundance of R. cynosbati and missouriense. On August 19 many of the former species were almost leafless, due to drouth.

Franklin, blister rust man, reports pre-eradication and scouting has been carried on with a trip up the Ohio - Indiana State line. He has also examined 13 tracts (State and private) in the non-glaciated area of the State containing 2875 acres of pine, scouted 3,539 acres, conducted crew work over 717 acres and found 135 Ribes bushes. Eight of the tracts were Ribes free, no wild nor cultivated Ribes being found; three had only a few cultivated bushes in the protective zones. These bushes were pulled at once and reported. This greatly facilitated the work of eradication.

\* \* \* \* \*

Most of the E.C.W. camps have completed their Ribes eradication work for this season in Wisconsin, although two are still continuing this work. We are hoping to continue the blister rust foremen at these camps during the winter as white pine location mappers. We have subdivided the State into districts and have tentatively assigned each E.C.W. foreman one of these districts.

T.F. Kouba, Wis.

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#### SUMMARY OF ECW-BRC WORK IN MASSACHUSETTS

C.C. Perry

The Massachusetts ECW organization consists of 32 companies located in 27 camps. One company is located on a Metropolitan Park area; one on a Water Reservation, and the other 30 are in State Forests.

The plan for ECW-BRC work for the season called for activity at 12 of the 30 State forest camps. Work has thus far been completed at three of these camps, and continues in progress at 8 locations. We shall be unable to reach the 12th camp this season. The blister rust control work is being carried on under the direction of 6 checkers who supervise the work of crews which have been developed entirely from the enrolled C.C.C. personnel. Thus far during the season an average of 100 men have been actually engaged in control work daily, although the number of men per day has varied materially. The time per day devoted to the actual eradication of Ribes has been exasperatingly short. The crews have an average of 5 men and a sub-foreman; there being two crews per camp.

The following data summarize the results of the field work to September 1:

No. of acres searched for Ribes - - - - -	8,250
No. of wild Ribes found and destroyed - - -	109,600
No. of man days enrolled men - - - - -	3,450

At the present writing Ribes are showing some defoliation and it is clear that the field work cannot continue much longer. At least not beyond the end of September.

C.C.C. BLISTER RUST WORK IN NEW YORK

K.K. Stimson

Ribes eradication work has been in progress at the Davenport camp since June 29. The work has been confined to State lands (Hewitt areas) and necessary protection zones on adjoining private lands in Schoharie and Otsego Counties. Up to September 1, a total of 6,710 acres had been cleared of 144,484 Ribes requiring 23,795 man hours of labor, or 3.5 man hours per acre. About 75% of this work was reeradication. The initial eradication consisted in most cases of increasing the protection zones from 900 to 1500 feet around the white pine plantations. According to Harpp, in 1932 protection zones in open types around plantations were increased to 1500 feet, prior to that time 900 foot zones had been established.

An average of 140 men have been available for field work at this camp. This is a larger number than in the other camps I have visited and is principally due to the fact that no buildings have been constructed. All of the men have been on blister rust control work except a detail of twenty assigned to telephone line construction and road building since August 1. Harpp has had four technical foremen on the Ribes eradication work, each having supervision of four crews averaging nine C.C.C men. In addition, four to six State foremen and four checkers have been assigned to this camp. Two of the checkers were used as foremen. Eight of the C.C.C men also acted as crew foremen and were very satisfactory, according to Harpp. Tree planting was started on August 28 and all but two of the Ribes eradication crews were transferred to this project. These two crews were completing work on September 7.

Work began June 1 at the Bolton camp with from 19 to 22 crews, averaging 130 men, assigned to the project. Operations have been confined to State and municipal lands located in the towns of Hague, Bolton, Warrensburg, Queensbury and Horicon. Up to September 1st, a total of approximately 5700 acres had been cleared of about 235,000 Ribes. This work required 34,430 man hours of labor, or an average of 6.0 man hours per acre. Ribes eradication work terminated at this camp on September 12th, when the tree planting project started.

Five technical foremen and four checkers have been assigned to this camp. The latter have been used in a supervisory capacity except on Saturdays when all of the foremen have been assigned to check work. In addition, from seven to ten State foremen have been employed and 13 of the C.C.C boys have been used as crew foremen. It is quite apparent that excellent supervision has been given the work at this camp.

C.C.C. EDUCATIONAL PROGRAM BRINGS PROFITABLE RESULTS  
L.W. Hodgkins

My work with the C.C.C. has been that of general utility man. One has to fit into the job wherever the work demands, tie up the loose ends; inform the men on the purpose of the work, interest them in it and build up morale. Effective blister rust control depends on developing and maintaining high standards of performance. Inspection of the control crews and their work serves also to emphasize the fact that they have responsibilities of a high order.

I have had exhibits placed at all of the camps where I have worked. In some camps a special building is to be prepared for educational purposes and these exhibits will be placed along with appropriate literature on blister rust and its control.

The men as a rule have little reading matter in camp and are eager to get something to read, especially along the line of their work. Blister rust folders have been placed in the hands of the men engaged in rust control. Captain Drew, of the Sharon Camp, showed a keen interest in my exhibit placed there, and suggested that it be made a permanent feature of the camp, supplemented by a talk to the boys each week on features of the control work. I have made it a point, before starting a new crew to work, to tell them the essential facts about the rust, why it should be controlled as well as how the work is done. In one instance, I asked the men if they knew why they were pulling Ribes. One man spoke up very quickly and said no. I learned that the men had never had the disease explained to them and did not understand how, by eradicating the Ribes, they were protecting the white pine.

In another instance I found the men were missing too many bushes. I asked the foreman to have the crew come back to where they had started and line them up again. The men were shown the missed bushes and told why it was important to find every one. In this instance the poor work was largely due to territory missed between crew strips. Later, when I again met this crew, they were doing excellent work even to getting seedlings with cotyledons still intact. The foreman, a C.C. man, had adopted a plan of fining each man a cigarette for each bush found back of the man. The boys are not overburdened with funds and cigarettes are at a premium, so each man was keen on his job, with a big laugh for the unlucky lad who lost. Such a spirit of friendly competition makes the work interesting to the men and assures good work.

C.C.C. CHIPS ON THE CLEARWATER  
B.A. Anderson

The cadres for the C.C.C. blister rust camps on the Clearwater National Forest arrived at Jaype, Idaho on June 14 and 15. The companies arrived on June 26 and 27. Practically all C.C.C. men were used on camp construction until July 10. During this period of camp construction, camp superintendents trained the men for eradication work daily in groups of about 30 men.

During the week of July 10 to 16, approximately 40 percent of the men were available for field work. At the present time about 70 percent of the camp enrollment is available for eradication work. The daily average of men turned out for the week July 17-21 was 137 men per camp; for the week July 24-29 the average per camp was 133 men. Taking all factors into consideration, it is quite doubtful if this average will be increased.

A weekly summary of work done is compiled and distributed to all camp superintendents. During the past week 1,272,000 Ribes were removed from 7,000 acres of upland and 1,000 acres of stream type. In addition, 23,500 gallons of spray were put out. Preliminary checks of worked areas indicate that the work being done is excellent. Camp superintendents, foremen and checkers agree that there is a marked daily improvement in the work and attitude of the boys.

With the exception of local quotas, the C.C.C. personnel was enrolled in the smaller towns in up-state New York. It was an agreeable surprise to find at least a dozen men who had worked on blister rust control projects in the East.

We are all happy members of the "woodpecker army" down here; homeless foresters, horseless cavalrymen, postless soldiers, Cuba-less marines, dry-land sailors and the C.C.C.'s. Our one aim is to help make a success of the President's plan; we believe that the Clearwater project is functioning.

(Extract from Western Blister Rust News Letter)

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#### NEW YORK BOYS AND CONTROL WORK IN ST. JOE NATIONAL FOREST, IDAHO

The blister rust control conservation project on the St. Joe National Forest is composed of fourteen camps, nine of which are Forest Service camps and five are state and private camps. These camps embody nearly 3,100 men enrolled chiefly from New York City. These men will all be employed on Ribes eradication work during the summer months.

Actual Ribes eradication started on June 26 with over 1,000 men turning out for field work the first day. Moderate rains during the last few days of June greatly delayed field operations.

With nearly 3,100 men, 1,400 trench picks, 100 axes, 100 Pulaskis, 14 tons of twine, 100 tons of chemical, 240 spraying units and adequate transportation in the field coupled with well trained field supervision and the keen cooperation of the Army officials in charge, the Ribes population of the western portion of the St. Joe National Forest will be greatly reduced; also a large number of men will be given valuable woods training.

H. J. Hartman.

(Extract from Western Blister Rust News Letter).

C.C.C. BOYS FIGHT BLISTER RUST AND FIRES IN MICHIGAN  
J. K. Kroeber

A beautiful stand of white pine of about 600 acres ranging in size from seedlings to mature trees was destroyed by fire last week. This stand was located in Marquette County, Michigan, near the village of Gwinn. Mr. Don White, who is supervising blister rust control work in that vicinity had just completed a preliminary survey of the area preparatory to protecting it from disease.

C.C.C. boys were doing blister rust control work in an area a few miles away; working hard to get their project done so that they could begin work on this new area which was one of the finest in the county. Suddenly someone dashed up and yelled, "Fire", and the blister rust crews were off to fight it. A surprise and great disappointment awaited them; the Iron Pin pine area was burning, the very stand they had hoped to protect from disease. The boys worked hard to combat the flames and their numbers were augmented by others from the nearby Little Lake C.C. camp. A high wind was blowing and the fire spread rapidly and soon developed into a crown fire.

The boys who had been taught to appreciate the value of white pine, fought desperately, but in spite of their efforts, were forced back to the bank of the Escanaba River and finally had to swim the river in order to save themselves. Sparks and embers had been blown across the river and started numerous spot fires which the boys succeeded in putting out. It was a valiant fight, but when the smoke had cleared away, 600 acres of beautiful white pine was a black scar on the landscape. None felt the loss of this stand more than the blister rust boys.

September 9, 1933.

-----

A SUGGESTION ON MAP MAKING FROM MAINE  
K.K. Stimson

A point of recent discussion on blister rust control work in this region was the designation of control areas on maps. In many instances, long, narrow areas, not over a few hundred feet in width were shaded in on the maps. A pine area plus adequate protection zones in most cases is at least eighteen hundred feet in width. In checking up on these areas in the field, we found that open land within the protection zones bordering pine stands where the stone walls, fences and brush rows had been examined for Ribes had not been shaded in on maps as being worked. Also in some instances, portions of pine areas on high ground, where there were no Ribes and which had been scouted by the technical foremen rather than have the crews run over the area, had not been designated as worked. These irregularities on the map were straightened out and there should be no misunderstanding in this respect in the future.

BLISTER RUST FOUND ON RIBES OXYACANTHOIDES L.

While on inspection trip to Mackinaw Island, Michigan on September 19th with Mr. H.N. Putnam, we located disease on R. oxyacanthoides L. This is the first time it has been reported on the Island. We examined R. cynosbati and R. vulgare growing close by, but found no disease present.

R. I. Thompson, Mich.

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WHO CAN BEAT THIS RECORD?

T.F. Kouba.

Exceptional progress has been made in Ribes eradication on the Menominee Indian Reservation since C.C.C. work began there on July 13. During the 28 working days more than a million Ribes bushes were removed to protect 2,700 acres of white pine. Including protective zones approximately 3,700 acres of Ribes were eradicated. The principal species was R. cynosbati; with R. glandulosum second, and R. americanum third. A large portion of the cynosbati bushes were found infected. Pine damage is just beginning.

Systematic checks were made to determine whether the work was within the live stem standard of 25 feet per acre. Five areas were chosen at random and five acres were included in the check. The following data were secured:

<u>Strip No.</u>	<u>Acres covered in strip</u>	<u>No. of Ribes</u>	<u>Feet, Live Stem</u>
1	1	2	1.5
2	1	9	7.5
3	1	12	9.5
4	1	8	13.5
5	1	3	8.5
<hr/> <u>Average</u>		<u>6.8</u>	<u>8.1</u>

Results show that the areas average only 8 feet of live stem per acre. By taking into consideration the fact that the territory covered averaged approximately 300 Ribes per acre, one can appreciate the thoroughness of the work.

A strip-line survey has been conducted on the Reservation under the direction of H.J. Ninman, with the object of securing an unbiased and quantitative determination of the pine damage caused by the rust. The Indians have shown great interest in protecting their fine stands of pine reproduction and the damage study will enable them to more fully evaluate the necessity for control.

September 7, 1933.

NEW COUNTIES FOUND INFECTED IN WISCONSIN  
T.F. Kouba

During the past month blister rust has been found in three new counties in Wisconsin - Bayfield, Langlade and Vilas Counties. The total of infected counties is now 36, in 19 of which infected Ribes have been found and both pine and Ribes infections occur in 17 counties. In the northern half of the State, where practically all of the native white pine stands are established, every county with the exception of four, has blister rust within its borders.

All of the recent infections were discovered on Ribes cynosbati. The data are as follows:

County	Approx. location	Date infection found	Prevalence		Severity Percent infected bushes	Uredinia	Telia
			Number bushes examined	Number bushes infected			
Bayfield	Near Cable, Wis.	7/15/33	20	17	12	80%	20%
Langlade	Phlox, Wis.	8/10/33	14	1	less than 10%	25%	75%
Vilas	Phelps, Wis.	8/14/33	316	2	less than 1%	85%	15%

August 25, 1933.

-----

BLISTER RUST INVADES THE CLOQUET FOREST IN MINNESOTA.

Mr. Ralph Murphy, blister rust control checker, has been supervising the work of 18 men on the Cloquet Forest Experiment Station in Minnesota. All the members of the blister rust eradication crews have had the privilege of inspecting the Duluth blister rust damage demonstration which is located about 30 miles from the camp.

Blister rust infection was never found on the station previous to this summer. During the month of August, three infected Ribes were found. The first was located by H. N. Putnam, Supervisor of blister rust control in the Lake States Region, the second, by Murphy and the third by George Smith, an enrolled member of the C.C.Camp 79-S.

September 13, 1933.

L. B. Ritter, Minn.

LARGE CREWS USED AT SUPERIOR, WISCONSIN UNDER THE N.R.A.  
T. F. Kouba.

Rust control under the NIRA program began at Superior, Wisconsin, officially on the afternoon of September 13.

The crews at Superior are composed of 16 men, of which 12 work in line with three men directly behind the line and a crew foreman back of the checkers. The crew foreman is with the crew at all times and he is instructed to leave the crew only with permission from the supervisor, Darrell Slocum. Three crews are used, and this gives employment to 48 men and a supervisor. Every man of the group was unemployed at the time we assigned him to work, and out of the first group of 30 men interviewed and accepted, every man reported for work at the appointed time. Because of the presence of the Thimbleberry (Rubus parviflorus) which, when small, resembles the R. triste it was essential that we give the crews considerable training in Ribes identification. R. triste was one of the principal Ribes species at the park. Before we began crew work we gave each man that said that he was unable to identify R. triste a branch of the species to carry with him. I believe that the men were frank, and those who were unfamiliar with it told us so that we could give them special attention. We tried to point out that the first day was a field training school. that we wanted them to admit their weaknesses but that by the next day we expected each man to know all the Ribes on the area being worked.

The bushes on the area were comparatively small so Doctor Martin suggested that we use a special type of hook for the work; a hook that is small but strong, and can be easily carried. We had a blacksmith make up a number of these hooks which Doctor Martin designed for us. It has served the purpose very well. The hook is only ten inches long. It has two prongs at one end and a small handle that fits the hand at the other end, and made from a 7/16" iron bar. These hooks cost us 50 cents each.

September 18, 1933.

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SUGGESTIONS FROM THE LAKE STATES ON CHECKING BLISTER  
RUST ERADICATION WORK  
H. N. Putnam.

Checking the areas after eradication is a matter of great importance. Checking should be done as soon as possible after an area has been worked so that any reworking necessary can be done while the crews are still in the locality. A standard of 25 feet of live stem or less per acre constitutes a satisfactory job. Such a standard of work furnishes a reliable method of determining whether or not an area is left in a satisfactory control status. In the Lake States check strips are run at 10-chain intervals through the area worked. Each strip is 13.2 feet or 1/5 of a chain in width. Ribes are taken by chain long segments, by species, number of bushes and feet of live stem on forms designed for this work. This system of checking constituting a 2 percent cruise is a system we have used in the West and has proved satisfactory.

In certain areas the checkers are asked to take additional data as they go over their strips. This information will be a sort of valuation survey for use in land-acquisition work. It will consist in dividing the area into standard timber age class types with some notes of soil conditions. Since we are already mapping Ribes types it is not believed that the additional work will require much time and it will not be such that it will distract the checker looking for Ribes on his strip, since no quantitative data will be taken except that pertaining to Ribes.

FOREST SUPERVISORS IN THE SOUTH SUPPORT BLISTER RUST PROGRAM.

Roy G. Pierce

Forest supervisors in the four southern forests of Unaka, Pisgah, Nantahala and Cherokee have given strong support to the blister rust program of scouting and eradication. Each blister rust checker is given a letter of introduction to all workers in their forest. A resume of the blister rust work is provided and close personal efforts are used to enlist the services of everybody in the region in aiding in the location of stands of white pine containing Ribes. All findings are reported to the camp superintendent.

Cultural foremen are the key men in reporting all Ribes and pine locations and emphasis is laid on the early report to the supervisor. All leads are followed up by the blister rust checker who examines the area carefully. As most of the bushes are isolated, they are pulled at once and reported. This greatly facilitates the work of eradication.

C. A. Swarthout recently finished checking the work at the Mortimer Camp F-5, on the Pisgah and found good quality of work done by the scouts. He reports 540 acres protected this month, most of which runs better than 20 percent white pine stocking. Only about 30 bushes were found in the pine area itself but thousands of bushes were located nearby outside of the protective zone.

September 23, 1933.

WHITE PINE BLISTER RUST CONTROL SITUATION ON CHEROKEE NATIONAL FOREST

R. M. Beeman.

Blister rust has not been found on this Forest. According to latest reports its southern limit is 150 miles north of the North Carolina-Virginia line. The C.C.C. program provides the opportunity to safeguard the Forest at this time.

Since July 25th, the writer, designated as blister rust checker, visited the twelve C.C.C. camps on the Cherokee National Forest, leaving samples of Ribes enlisting the cooperation of cultural and truck-trail foremen, through their respective project superintendents. These men were asked to keep systematic watch for white pine areas containing Ribes. That done, likely Ribes sites throughout the Forest were scouted via road, trail, and brush. Whenever a sizeable patch was found within working distance of a C.C.C. camp men from that camp were employed in scouting and eradication in the designated area.

Ribes have been cleared from two pine areas and a crew of 4-5 men have been pulling bushes for 13 days in the upper Tellico basin. It is doubtful they will be able to complete this job before the leaves drop. Ribes rotundifolium was positively identified only once - on State Line Ridge, at elevation of over 4,000 feet. The major portion of the Ribes in this basin are R. cynosbati; its habitat is rock bars on steep headwaters, at elevations of 2,000 to 5,000 ft. Two patches of white pine were located through local questioning on the high ridges, and protected. Most of the white pine is in the valleys and on the lower slopes.

Another locality is Big Frog Mountain on which a crew of four men scouted and eradicated eight days, cleaning it up. There are a few white pine on the mountain within striking distance of the Ribes areas.

The third site is on the Hiwassee River, two miles upstream from McFarland; from this the checker pulled the Ribes in one day. Three day's scouting in the vicinity failed to uncover any more bushes.

September 9, 1933.

#### PROBLEMS OF SCOUTING IN VIRGINIA

The work at the Speedwell Camp (F-5Va) has consisted entirely of reconnaissance since in no instance have sufficient numbers of Ribes bushes been found to justify the use of a crew for eradication. Inclement weather and the presence of very rank undergrowth in the coves have been the principal factors in hindering progress of the scouting.

Two scouts working together have been employed from the first in covering the area. This was felt to be desirable on account of danger of accidents in the rough country traversed and the greater ease in pulling large bushes which are common in the area.

Approximately 2,350 acres have been cleared of Ribes during the period July 17 to September 9 in the protection of 460 acres of white pine. Ribes bushes to the total number of 348 have been destroyed requiring 286 effective man hours.

Ribes rotundifolium constitute over three-fourths of the total bushes destroyed, with Ribes cynosbati making up the remainder.

One large pine area has been present in each of the three watersheds worked in. The pine is principally young growth 10-20 years of age in fairly good condition, with scattered groups of seed trees.

Reconnaissance of future scouting areas in this region was completed before leaving camp by the checker. This has required some length of time due to the large amount of acreage necessary to be covered.

September 12, 1933.

W. H. Robens.

PINE SCOUTING IN THE GREAT SMOKIES

Joe Frank Manley

There are four pine areas in the Park, namely: Cataloochee, Cades Cove, Deep Creek and Hazel Creek. The two latter areas are small and were cleared of Ribes by myself. Small strips of pine occur here and there throughout the Park outside of areas mentioned. These have all been examined. Ribes are scarce; in the Cataloochee area I found only one lot of cultivated Ribes and pulled 126 R. cynosbati over an area of about three acres.

White pine is reproducing well in the Park, and will increase as the Park develops. In the Cataloochee, a plot one-sixteenth of an acre in size bore 264 white pine seedlings, or approximately 4000 pines per acre. This stand was about four acres in extent. Other open sites three to six acres in extent, former pastures, have now a heavy white pine reproduction, which with adequate protection are certain to add materially to the recreational and scenic value of the Park.

September 16, 1933.

DIFFICULTIES IN RIBES ERADICATION WORK

T. C. Green

The C.C.C. boys engaged in blister rust eradication at Camp Mohican Loudonville, Ohio have real hazards to encounter in their work of removing the Ribes bushes. Steep slopes along the Mohican River, are difficult of access and ropes must be constantly used to reach otherwise inaccessible places where the Ribes have gained a foothold. The boys have had some bad scares but so far have been fortunate enough to escape greater injury.

In addition to the rather unfriendly topography, the Mohican territory is a natural habitat for the copperhead snake and it has been necessary for the men to be continually on the alert. While the copperheads are not present in large numbers the blister rust crews have killed 18 since August 1.

The following data on the number of copperheads killed and their respective length was recorded by the boys and is of interest for this area:

1 - 37 inches	7 - 24 inches
4 - 18 "	1 - 15 "
1 - 8 "	1 - 20 "
	3 - 12 "

The company commander has recently requisitioned canvas leggings for the boys to wear in this and other similar work and with such leg protection, the snake hazard should be considerably reduced.

September 10, 1933.

USE OF AIR MAIL

H. P. Avery

Attention of the field employees is called to P.B.A. Memorandum #241, which was recently sent out by this office regarding the use of air mail instead of telegrams. It is the desire of this Division to cooperate fully with the Department in this matter.

Note the following examples of the time required for delivery of air mail from Washington to various field offices:

Leave

Washington	2:40 p.m.	Monday
"	2:40 p.m.	"
"	4:20 p.m.	"
"	4:20 p.m.	"
"	9:20 p.m.	"

Arrive

Spokane	7:35 p.m.	Tuesday
Milwaukee	12:30 a.m.	"
Albany	1:30 a.m.	"
Boston	4:30 a.m.	"
San Francisco	9:35 p.m.	"

As stated in the last paragraph of the P.B.A. Memorandum, air schedules can be obtained from your local post office. It is requested that you secure a copy of this schedule promptly and arrange to have your name put on the list to receive supplements in order that you may be advised of any changes. Study the schedules carefully and where this service offers as quick delivery as necessary it should be used instead of the telegraph.

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CONTENTS

	<u>Page</u>
Agent Hodgkins Finds Dasyscypha Canker on White Pine in Massachusetts .....	163
Blister Rust Control Progress .....	155
Blister Rust Control with the C.C.C. in Massachusetts .....	159
Blister Rust Control Work Being Carried on in Model State Park in Michigan .....	169
Blister Rust Control Work on the Proposed Shenandoah National Park .....	167
Blister Rust Found in Pocahontas County, West Virginia .....	168
Blister Rust Items from District No. 12, New York .....	162
Blister Rust Recognized as an Enemy by the Menominee Indians .....	157
Blister Rust Scouting in the Northwest .....	166
Camp Foreman Devises Good Scheme for Increasing Efficiency of Crew .....	161
Cooperation Between Blister Rust and Weevil Control Projects	
at Camp Fernow in Connecticut .....	170
Does Number of Ribes Found Affect Interest and Efficiency of Crew? .....	168
How Late Does Aecia Form in the Northern States? .....	161
Life at a C.C.C. Camp at Rough Run, West Virginia .....	170
N.I.R.A. - B.R.C. Work in Massachusetts .....	156
New Infection Area Found in Upper Michigan .....	156
New Motto - "N.R.A. - No Ribes Allowed" .....	159
New Pine Disease Found .....	167
Notes on Native Ribes in the Southern Appalachian District .....	160
118 N.R.A. Men Working on Blister Rust Control in Maine .....	165
Progress of Blister Rust Control on National Forests and Parks	
in the Southern Appalachian District .....	164
Publications .....	171
Ribes Infections on the Newman Lake Study Plot in Washington .....	169
Saving the White Pine .....	163
State Leaders Appointed in Iowa, Ohio and Maryland .....	168
Susceptibility of the Alpine Currant to White Pine Blister Rust .....	165
White Pine at Camp Ripley, Minnesota, Being Protected from Blister Rust .....	161

U. S. Department of Agriculture  
Bureau of Plant Industry  
Division of Blister Rust Control  
Washington, D. C.

BLISTER RUST CCNTROL PROGRESS

S. B. Detwiler

Mid-October finds blister rust control work still under way in many localities. Primarily a seasonal occupation, the field activities are gradually being reduced with leaf fall and the approaching snow period. Ribes removal ended for the season in the C.C.C. camps toward the end of September and with the subsequent reorganization of these units on October 1.

On the NIRA program, Maine, Massachusetts and Pennsylvania ceased Ribes eradication at the same time, but in other States October 16th showed 1,228 men on NIRA work. This was mainly eradication in areas of high Ribes concentration but some of the work is preeradication survey and pine location.

During the 1933 season the combined efforts of blister rust control workers have netted widespread returns in the protection of the nation's white pine. The exact figures are not yet available, but present data show that the C.C.C. boys working in 21 States have cleared 521,841 acres of 47 million currant and gooseberry bushes. They removed 23 million bushes from the forest areas of Idaho, 9 million from California, 4 million from Wisconsin, 3 million from New Hampshire, and some 2 million respectively from Pennsylvania, Minnesota and Maine. The NIRA program has so far contributed 37,172 man days of labor and cleared 87,000 acres of almost 11 million Ribes bushes. The regular blister rust control activities of Federal, State and private agencies during the season resulted in an additional 300,000 acres cleared of approximately 8 million bushes through 47,884 man days of labor. A tentative summary of all 1933 activities shows that by October 16th work has been conducted in a total of 27 States and 912,450 acres cleared of 65 million Ribes. Idaho forests lead with a removal of 34 million bushes from 227,000 acres. In the Eastern States 12 million bushes were removed from 512,482 acres and in California 12 million were removed from 71,000 acres. C.C.C. workers have cleared 10,000 acres of 248,000 Ribes in Virginia and NIRA blister rust crews have recently cleared 817 acres of 71,000 bushes in western Maryland on areas out of range of C.C.C. camps.

Blister rust control activities have expanded rapidly during the last half of the 1933 season and this tentative summary of the activities shows that all units have responded to the work with vigor and enthusiasm. Even now preparation is well under way for the spring campaign. Scouting, mapping and preeradication surveys have begun on an extensive scale in Wisconsin and Michigan. In the West plans are being formulated to conduct a preeradication survey over two million acres of forest area following the closing of Ribes eradication camps. This survey will cover practically all white pine areas on which information is not now available.

NEW INFECTION AREA FOUND IN UPPER MICHIGAN  
J. K. Kroeber, Mich.

While on a tour of inspection, Dr. Martin, Mr. Putnam and Agent Kroeber discovered a new pine infection area near the city of Calumet in the Copper Country of Michigan.

The area consists of a highway plantation in which white and Norway pine were planted in mixture in rows about 1,000 feet long, parallel to Highway US-41. The trees were planted in 1930 and now average one to two feet in height. At one end of this plantation is a yard full of cultivated black currant bushes (*Ribes nigrum*), about 75 bushes in number and all infected. Eighty percent of the leaves were infected and fifty percent of the leaf surface was diseased. Infection was one hundred percent telial.

Upon examining the white pines, we found one hundred percent of the trees infected within five chains of the bushes, and seventy-five percent infected within fifteen chains. Cankers were of 1931 and 1932 origin, mostly on 1930 and 1931 wood. The trees appeared to be about seven years old.

This is the first time that blister rust has been found on pine in Houghton County, thus bringing the total known pine-infected counties in the Upper Peninsula to six.

September 26, 1933.

-----

N.I.R.A. - B.R.C. WORK IN MASSACHUSETTS  
C. C. Perry, Mass.

Ribes eradication work on N.I.R.A. funds was concluded for the season in Massachusetts on September 30. Interest in the work on the part of the labor personnel was maintained to the last day of field work, and in spite of considerable defoliation of Ribes, it is felt that some very good work was performed. All the men employed have expressed their appreciation of this temporary work and it is believed that several of the men will readily make foreman material if needed next spring.

Eight crews of eight to ten linemen and two straw bosses behind the line were operated during the brief period of control work. Part-time employment was thus given to eighty-three previously unemployed laborers for a total of 6,671 hours. This entailed the distribution of approximately \$3,750 in wages to these men.

In commenting on this post-season emergency blister rust control work, the Massachusetts Director of the National Reemployment Service states:

"It is very gratifying to note the number of people to whom you have given employment during this work and we hope that we may have the pleasure of working with you again next spring when you desire further personnel."

BLISTER RUST RECOGNIZED AS AN ENEMY BY THE  
MENOMINEE INDIANS

H. J. Ninman

The Menominee Indian Reservation in Wisconsin comprises 360 square miles. Seven townships are located in the northern part of Shawano County, and three adjoining townships on the eastern side are a part of Oconto County.

In 1918 white pine blister rust was found just south of Keshena on the banks of the Wolf River and near the south end of the Keshena bridge. The following year this infection center was freed of Ribes and the few small infected white pine trees were destroyed. A few isolated Ribes infections were found within a mile of the infection center.

Progress in Ribes eradication was slow from 1919 to 1932 because the Indians did not realize the seriousness of the blister rust. At first most of the Indians seemed indifferent toward the control work, and the few men employed for the field work appeared to be more interested from the standpoint of earning wages than saving the white pine. This was natural because there was no destruction of large white pine due to the blister rust, and only a few diseased small trees could be found in spots. It was difficult for anybody not especially acquainted with the destructive nature of the blister rust to foresee the real danger.

A change in attitude toward the blister rust occurred in 1930. The Indians, especially those of the younger generation, could see from the number of diseased pines and the increasing number of orange-colored spots on the currant and gooseberry leaves that the blister rust was making rapid progress where the currant and gooseberry bushes were numerous. They could also see for themselves that the blister rust was making little or no progress where the currant and gooseberry bushes had been eliminated in previous years. Furthermore, owners of pine woodlots (not located on the reservation) in all parts of Shawano County were eradicating currant and gooseberry bushes, which left no doubt as to the practicability of this method of controlling the rust.

Early in 1932 the Indians on the Reservation showed by their pleas to the authorities in charge that a large majority favored a more aggressive program to check the spread of the disease. With funds available from the appropriation for the Civilian Conservation Corps, an average of about 100 Indians were employed at Ribes eradication and as told in last month's Blister Rust News, these workers have given an excellent account of themselves in this work.

The Menominee Indians are very proud of their white pine forest as it constitutes the best white pine stand remaining in Wisconsin. They appreciate the monetary value of the mature timber, which is estimated at about \$2,000,000, but that is not the only consideration. The rapid growth

of white pine on the Reservation as compared to that of other timber trees, the shelter furnished to game birds and wild animals, the seed which serves as food for wild life, and the scenery as affected in summer and winter by the deep green foliage of the white pine, are all appreciated by the Indians.

From the standpoint of soil conditions the white pine is especially valuable. The soil is mostly sandy loam. Much of it is too light for farming purposes. In places the soil is sufficiently fine and fertile that the Indian farmer can compete with farmers outside of the Reservation in the production of grain crops, hay, and livestock. However, practically all of the lighter soils are sufficiently fertile to produce a good grade of white pine provided fires are kept out so that a thick coat of duff can accumulate to cover the soil. But white pine cannot grow profitably unless currant and gooseberry bushes are eliminated to prevent destruction by the blister rust.

Blister rust control on the Reservation is not unusually difficult. There are many swamps with a large number of Ribes, but this is not an unusual condition. Steep rocky hillsides are few, and none of them are very high. The area just north of the southern boundary of the Reservation contains many Ribes, but much eradication work has already been done there. In four infection centers of this area it was found that five percent of the white pines of ten feet or less in height had visible cankers of blister rust in 1933.

Farther north there are many areas where white pine reproduction is abundant but where currant and gooseberry bushes are few, and in many places of such areas no control work is necessary except in the swamps. In some places the sparseness of the growth of currant and gooseberry bushes is due to dense shade. There are also large areas where repeated fires have destroyed nearly all of the timber trees as well as the shrubs. In such areas there are few currant and gooseberry bushes and small groups of white pine trees here and there will reseed the area to white pine if fires are prevented.

The attitude of the blister rust control workers on the Menominee Reservation is illustrated by the remark of one of the crew men when he was asked how he liked the work. The Indian answered, "Fine, it is hard work, but we must protect our pines." They very definitely look at the blister rust control work as their own responsibility; their own pines must be protected. They not only feel that they are protecting their own pine trees, but that they are engaging in a worth while, profitable and interesting piece of work. This is decidedly gratifying to those of us who are carrying out blister rust control plans.

BLISTER RUST CONTROL WITH THE C.C.C. IN MASSACHUSETTS

Agent L. W. Hodgkins, who made an inspection of a number of C.C.C. camps in Massachusetts in September, praises the work of the C.C.C. boys. In a report dated October 6, he writes:

Much can be said regarding the blister rust control work performed by crews made up of the personnel of the C.C.C. These crews have done good work and deserve a lot of credit for what has been accomplished this season, taking into consideration the fact that the season was well advanced before the men were available. There is also much credit due the men in charge of blister rust control in Massachusetts and those in charge of the C.C.C. in giving whole-hearted cooperation. The camp superintendents have expressed their willingness to cooperate in any way they could to make this work possible. All of the camps visited had from one to four crews pulling Ribes. These camps were located in the following towns: Foxboro, Winchendon, Erving, Savoy, Sandersfield, Otis, and Great Barrington. The following table shows the acreage worked by the crews in these camps and the number of Ribes pulled:

<u>Location of Camp</u>	<u>Acreage Covered</u>	<u>No. Ribes Pulled</u>
Foxboro, Massachusetts	525	705
Winchendon "	117	57,691
Erving "	600	3,400
Savoy " (2 camps)	(232 $\frac{1}{2}$ ) (171 $\frac{1}{2}$ )	(5,557) (4,680)
Sandersfield "	720	22,378
Otis "	302	12,500
Gt. Barrington " (2 camps)	484	13,268
*Brimfield "	177	3,075
**Totals	3,329	123,254

\* Not working at this time.

\*\* The seasons total will be somewhat larger.

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NEW MOTTO - "N.R.A. - NO RIBES ALLOWED"

R. I. Thompson, Mich.

The checker, Mr. Van Sickle, in charge of blister rust work in this camp (Camp Ogemaw 59S, West Branch, Michigan) gave me a suggestion for a motto - "N.R.A. - No Ribes Allowed", and I am passing it along.

We are finishing up crew work in this camp this week. To date (October 7) Mr. Van Sickle's crews have pulled 246,341 Ribes, protecting 1,061 acres of planted white pine eight to twelve years of age and averaging 300 to 400 trees per acre. The total area worked by crew and scout is 2,332 acres.

We expect to do considerable preeradication work on Ogemaw Forest plantings this fall.

NOTES ON NATIVE RIBES IN THE SOUTHERN APPALACHIAN DISTRICT  
Roy G. Pierce

While it is true that the distribution of most wild Ribes goes up in elevation as one proceeds south from the Pennsylvania line, there are numerous places in the South where Ribes are found below the upper limit of the white pine belt. The following places are cited to prove this point.

Mr. E. H. Francis working in the Shenandoah National Park at elevations from 2,300 to 3,600 feet finds Ribes rotundifolium along Skyline Drive varying from 100 to 1,500 per acre and over. Among the white pines just outside the Park on Two Mile Run in Rockingham County, Clyde A. Stevens reports R. rotundifolium at 1,400 feet elevation and on South River in Augusta County, R. americanum at 1,300 feet.

In southern Virginia, Ribes have been found within the Unaka Forest near Konnarock, Sugar Grove and Speedwell at elevations around 2,800 and 2,900 feet, R. cynosbati being one of the species located. At Konnarock the Ribes were growing among rhododendrons in an opening close to a creek. Mr. Robens reports Ribes at other locations on the Unaka in the pine belt.

In the George Washington Forest in Virginia and West Virginia Ribes are abundant in many locations from 1,500 feet upwards among the white pines. In West Virginia while Ribes have not been found in all white pine areas, there are many areas already known in Pendleton and Pocahontas Counties where they are a menace to adjacent white pine.

In Tennessee the lowest elevation for Ribes in the mountainous section seems to be at McFarland where cynosbati was found abundantly by Mr. R. M. Beeman of the Cherokee National Forest. The bushes were found at 1,100 feet elevation among the boulders above the Hiwassee River. (These bushes had been first reported by Alban Stewart who scouted in Tennessee in 1918 or 1919). Beeman also reports "abundant Ribes cybosbati in the Cherokee Forest along the Tellico River at an elevation of 2,500 feet. White pine is also found here on the Tellico at 2,500 feet. On the Big Frog Mountains white pine is scattered along the ridge up to about 3,600 feet and on Bald Mountain it reached 3,000 feet. No Ribes have been turned up as yet in the latter two locations."

In North Carolina, on the Pisgah National Forest, Ribes have been reported in the past at elevations of 3,100 feet on Joe White Mountain. Mr. E. H. Frothingham reports seeing Ribes rotundifolium at 3,330 feet at Cranberry. In the Great Smoky National Park at Baxter Creek three miles southwest from Mt. Sterling, North Carolina, Mr. Joe F. Manley and I saw Ribes cynosbati occurring abundantly in the densely shaded (70 to 80% shade) rocky creek bottoms with north exposure at not more than 3,000 feet elevation. Ribes were found in similar situations on Mouse Creek according to Manley. While white pine is found above this elevation of 3,000 feet, the two hosts were not growing close together in these two creeks. In the Cataloochee, Ribes were found at 2,600 feet according to Manley.

CAMP FOREMAN DEVISES GOOD SCHEME FOR INCREASING  
EFFICIENCY OF HIS CREW

D. W. Burcalow

The carrying of the ball of string used to mark lanes covered in blister rust eradication work seems to be considered by the C.C.C. boys as being the most unpleasant part of the Ribes pulling job. It is especially so in thick underbrush, heavy windfall, and other obstacles which repeatedly tangle or break the string.

Al Owens, local man, and foreman of an eradication crew at Camp Winnie Dam in Minnesota this summer, devised a system which greatly increased the efficiency of his crew - also the other crews when it was adopted.

At the end of each strip the man who had skipped the most Ribes was penalized by being made to carry the ball of string until some other boy skipped the most. It got so at the last that none of the crew was passing up Ribes and Al said he then had to give the string to the one who talked, sang, or cut up too much on the different strips. Anyway, it worked in this camp and we will pass it on for what it is worth.

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WHITE PINE AT CAMP RIPLEY, MINNESOTA, BEING  
PROTECTED FROM BLISTER RUST.

L. B. Ritter, Minn.

Camp Ripley, located seven miles north of Little Falls, Minnesota, is the second largest National Guard Cantonment in the United States. About two-thirds of the twelve thousand acres in the reservation is wooded. The forest growth is mixed hardwoods and conifers with white pine seed trees well scattered over the area. The white pine reproduction is good.

One of the Minnesota State E.C.W. Camps is located on the reservation and considerable work is under way toward the improvement of the forest. The work includes the protection of natural white pine from blister rust and the planting of additional white pine. About 30 acres have been planted to white pine this fall. The planting stock was secured from the George Washington Memorial Forest Nursery maintained by the State Forest Service in Hubbard County. The eradication of wild Ribes within 1,500 feet of the George Washington Nursery was done with C.C.C. boys from Camp 66-S.

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HOW LATE DOES AECIA FORM IN THE NORTHERN STATES?  
J. M. White, Maine

A few years ago in the town of The Forks, Maine, a canker was found producing aecia on October 1. While scouting for pine in the town of Solon, Maine, last Saturday, October 14, I found a canker producing aecia.

BLISTER RUST ITEMS FROM DISTRICT NO. 12, NEW YORK

N. H. Harpp, N. Y.

Blister rust control work in District No. 12, New York, started on May 5 this season. In Chenango County we covered 11 townships on black currant eradication. Thirty-two plantations were worked, with a total of 2,748 acres in this county. An improvement was noted this year in the willingness of people to consent to have their black currants pulled, over 1929 when that work was first started in this section. Of course, at that time, very few people in the rural district here knew much about blister rust except that such a thing existed, and some, like many in other districts, thought it was somewhere else and not present in the vicinity where they lived.

Two State Hewitt areas also were covered in Chenango County with relief labor, and three with men from C.C.C. Camp No. 3.

The Chenango Valley State Park in Broome County, near Binghamton, was the only area in that county covered this year. The work was done with men furnished by the Park Commission from the unemployed of Binghamton, Endicott and Johnson City. These men were factory workers in most cases and not in the habit of working out of doors, but soon learned what was required of them and did it willingly.

A reeradication job was done this year on the Gilberts Lake State Park near Oneonta, in Otsego County, with relief labor.

One of the C.C.C. camps, No. 51 (State No. 6), was established near Davenport in Delaware County and assigned to this department for blister rust control work. Eradication activities were started on June 29. Five large State Hewitt areas were worked with these men in Schoharie and Otsego Counties. It required a little time of course to train these men, but after the first week, for the time that they were on the job, just as good work was done, both in quality and quantity, as with any men one might hire. Due to the camp being established later than we expected, the distance necessary to transport the men, short working hours, and the fact that several of the men were assigned to other projects, we did not cover all the work that was planned for this year. During the time that we have been at this camp we have received excellent cooperation from the army officials.

It appears to me that the C.C.C. Camps have been one of the best developments in history for general forestry, and for the protection of our forests from fire, disease and insects. Not only has this emergency measure been successful from the standpoint of the work that has been accomplished, but it has taught thousands to be tree minded, and has worked wonders with these men and boys physically and morally.

A blister rust pruning job was started September 18 on two State plantations in Greene County with men hired from N.R.A. funds. Work here is progressing very well, and in my opinion, is going to be very beneficial.

SAVING THE WHITE PINE

(Extract from the Providence (R.I.) Sunday Journal, Oct. 8)

The vital nature of the work the Civilian Conservation Corps is doing in combatting insect pests and fungous diseases which prey upon timber trees is reemphasized by President Charles Lathrop Pack of the American Tree Association in characterizing the white pine blister rust as a half-billion dollar menace.

The white pine, denominated the "king of softwoods", is one of America's most valued species. But it has been freely cut and utilized for generations, until the supply is gravely depleted and replacement planting has become a necessity. Yet for both old and new growth, protection against agencies of unwitting destruction is imperative. Fire takes its toll, and so do pests and diseases, and of these the latter two are, in the opinion of many authorities, the more important.

The white pine blister rust, a fungous disease which makes use of currant and gooseberry bushes as host plants in transmitting its spores, is invading new areas more rapidly than control measures are being applied, according to Mr. Pack. It is said now to be in the epidemic stage in the East to which it has advanced since its establishment in New England in 1915. Destruction of western white pine forests as complete as that resulting from the chestnut blight of some years ago is forecast unless control measures are adapted on a large scale.

It is a source of comfort, however, that the disease is not one of those which mankind is virtually helpless to combat. It can be controlled through the destruction of the host plants, the wild currant, the cultivated black currant and the wild gooseberry. Methods vary, but they are efficacious and their cost adds less than one dollar per thousand feet to the average cost of white pine lumber, it is estimated by a United States Department of Agriculture expert. It is plain that failure to fight the battle on the scale required by circumstances would be economic folly.

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AGENT HODGKINS FINDS DASYSCYPHA CANKER ON WHITE PINE IN MASSACHUSETTS

Agent L. W. Hodgkins informs us that while visiting the C.C.C. Camp at Savoy, Massachusetts, on September 14, he discovered Dasyscypha canker on white pine. He writes:

"While examining what appeared to be blister rust on white pine, I found Dasyscypha canker in the fruiting stage on a 15 year old tree. One infection was on a branch which had been killed and another on the trunk near the ground. This one was also fruiting. This is the first time I have seen this disease since locating it in the copper country in northern Michigan."

PROGRESS OF BLISTER RUST CONTROL ON NATIONAL FORESTS AND PARKS  
IN THE SOUTHERN APPALACHIAN DISTRICT

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Roy G. Pierce

George Washington National Forest, Virginia and West Virginia

Two experienced blister rust control men are in charge of the work in this Forest, namely, Mr. W. J. Cullen working out of Camp 2 near Staunton Reservoir, and Mr. G. U. Wolcott working out of Camp 4 at Fulks Run. Mr. Cullen reports that from 6 to 13 men have been working on Ribes eradication throughout September. They pulled 8,174 bushes in September from 1,022 acres, an average of eight bushes per acre. On this area 242 acres, or practically 24%, were worked by the scouting method. Of the 1,022 acres covered, 649 acres were first working and 373 acres were second working. Mr. Wolcott, who has been working with from 14 to 15 men throughout September in the Rough Run Spike Camp near Ft. Seybert, West Virginia, reports 33,962 Ribes bushes pulled from 606 acres, an average of 60 bushes per acre, all of which were gooseberries.

Great Smoky National Park, North Carolina and Tennessee

Mr. Joe Frank Manly, who has been on blister rust control in the Park since June 28, states that up until October 1, 133 Ribes had been found on four acres out of 2,010 acres worked in North Carolina, and 16 Ribes found on seven out of 1,825 acres worked in Tennessee. There are two important white pine areas in the Park - Cades Cove and Catalooche Creek in North Carolina. A few cultivated Ribes were found in Cades Cove and removed.

Pisgah National Forest, North Carolina

Mr. P. A. Swarthout reports two blister rust scouts working out of each of four C.C.C. camps in the Grandfather Mountain and French Broad Divisions in the Pisgah National Forest. At Mortimer two men put in 168 man hours, working 2,200 acres, including 775 acres of white pine, and found but seven Ribes. At Globe two men put in 214 hours working 2,910 acres, including 625 acres of white pine, and found but 28 Ribes bushes. These bushes which were cultivated and located at one place were pulled with the owner's consent. Up to and including September 23, 155 Ribes had been pulled on the Forest this season.

Cherokee National Forest, Tennessee

Mr. Robert M. Beeman, blister rust checker on the Cherokee, reports on October 1 that eradication work on this Forest is completed within 900 feet of any appreciable amount of white pine. There are probably several hundred thousand Ribes bushes on the headwaters of the Tellico and its branches; fortunately, there were only a few cases where white pine ranged up the valleys to the vicinity of the Ribes. Up to September 30, 62,620

Ribes bushes were pulled on the Forest, largely on the Upper Tellico, and on Big Frog Mountain. Beeman states that scouting in Georgia failed to reveal any Ribes. It is in Georgia that the major portion of white pine on the Cherokee is reported.

Nantahala National Forest, North Carolina, South Carolina and Georgia

Mr. William H. Warriner, who has been scouting for white pine and Ribes on the Nantahala National Forest in North Carolina, South Carolina and Georgia, reports that he and the scouts, of which there have been two or three since work began in August, have covered over 12,000 acres but have found and destroyed only 33 Ribes bushes near the white pines. These 33 Ribes were cultivated bushes found near the Laurel Branch plantation. As to wild Ribes Warriner states, "I have found Ribes in one place. That was on Thompson's Fork near Franklin. There was a large patch of cynosbati in a moist cove at about 3,500 feet. As there are no white pines about for miles I did no eradicating."

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SUSCEPTIBILITY OF THE ALFINE CURRANT TO WHITE PINE BLISTER RUST

T.F. Kouba, Wisconsin

The alpine currant, Ribes alpinum Linn., an ornamental shrub which is quite popular in certain sections of Wisconsin, was studied to determine the susceptibility or immunity to white pine blister rust of this apparently highly resistant Ribes species. During the spring of 1932 a half dozen of these shrubs were planted in a heavy pine and Ribes infection center of the Menominee Indian Reservation. Periodical inspections were made of these currants during 1932 and 1933. No rust was found on them during any of the nine inspections made, but, contrary to this, some nearby pasture goose-berries, Ribes cynosbati L., were heavily infected - so heavily infected that some of the bushes had dropped approximately 90 percent of their leaves by the middle of August. Several of these infected cynosbati bushes and some infected white pines grew within a few feet of the R. alpinum bushes.

Since our observations include data for only two seasons, the results obtained cannot be taken as conclusive. However, the data indicates that it is apparently safe to assume that the Ribes alpinum is less subject to the disease of white pine blister rust than many of the other Ribes species found within the State.

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118 N.R.A. MEN WORKING ON BLISTER RUST CONTROL IN MAINE

(Extract from "Portland Press Herald", Sept. 6)

W. O. Frost, white pine blister rust agent of the State forestry service, said Thursday that 118 men have been given employment on blister rust control in Maine under the public works provisions of the NIRA.\*\*\*\*

Mr. Frost has handled this summer the work done by men from Civilian Conservation Corps camps in Jefferson, Lewiston, Alfred and Stow, and says that surprising results have been achieved.

BLISTER RUST SCOUTING IN THE NORTHWEST

In order to determine whether or not the rust is spreading south from the Clearwater region of the Inland Empire into the scattered Pinus albicaulis and P. flexilis areas of west central Idaho and northeastern Oregon, a scouting trip was recently made in this region. Another purpose of this work was to determine, if pine infection was located, whether or not the year of origin was the same as for the oldest centers in the white pine belt (about 1923). If this should be the case, it would be evidence in favor of the theory, advanced by a few, that the rust entered the Inland Empire via the Columbia River route. Since no rust was found on this trip which included the region most likely to have been invaded in 1923, no additional support of the Columbia River route theory can be given. However, the absence of new infections in the areas scouted might be interpreted to mean that the rust conditions are not sufficiently favorable for infection from a southward spread from the Clearwater region, and therefore, we could not reasonably expect any centers of 1923 origin from a long distance spread up the Columbia.

The areas scouted and the host associations encountered are as follows:

Seven Devils Mountains at the extreme northern end of the Nezperce National- Forest, west central Idaho.

Pinus: albicaulis  
Ribes: petiolare, lacustre, viscosissimum, niveum, cereum, montigenum, irriguum and velutinum.

Brundange Mountain, 10 miles north of McCall, Idaho, on the west side of the Idaho National Forest.

Pinus: flexilis  
- Ribes: viscosissimum, lacustre and montigenum.

Wallowa Mountains, Lake Basin Region, Wallowa National Forest near Enterprise, Oregon.

Pinus: albicaulis  
- Ribes: petiolare, lacustre, viscosissimum and montigenum.

Anthony Lake Region, Whitman National Forest near Baker, Oregon.

Pinus: albicaulis  
- Ribes: petiolare, viscosissimum and lacustre.

Grande Ronde River Region, road from Enterprise, Oregon, to Lewiston, Idaho. About 10 miles from confluence of Grande Ronde and Snake Rivers.

Pinus: none  
- Ribes: niveum, cereum, velutinum.

(From S. N. Wyckoff's Report of August, 1933)

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Ribes eradication was still in progress on October 2 on the Red Lake Indian Reservation and the Vermillion Reservation in Minnesota according to State Leader Ritter. He states that local weather conditions on these two Reservations have resulted in the Ribes holding their leaves longer than elsewhere in the State.

ELISTER RUST CONTROL WORK ON THE PROPOSED  
SHENANDOAH NATIONAL PARK  
E. H. Francis, Virginia

Eradication

Up to October 7, 875 acres of white pine have been cleared of 235,-438 gooseberry bushes (*Ribes rotundifolium*) with 1,760 man-days. (The cost of establishing the protection lines around the pine areas has been included in the man-days total.) The largest quantity of bushes pulled per acre in this Park has exceeded 5,000 in number. Due to such a great abundance of large bushes and their presence usually on rocky cliffs, ledges, and steep slopes, the acreage of pine protected has been necessarily low. Protection is justified, however, since these areas are of prime importance when their landscape and recreational values are considered.

The eradication work has been carried on in the usual strip-crew method and it will be finished for this season by October 15.

Reconnaissance Mapping of White Pine

The reconnaissance mapping of white pine has been progressing very well all summer and will continue at least for another month at which time it will be carried on with the type mapping of the Park area. Several thousand acres have already been mapped and a large acreage of white pine (second growth and reproduction chiefly) have been discovered. The white pine seems to be seeding in fairly well and if given adequate protection from fire, grazing and disease it will become one of the main coniferous trees to be found in the proposed Shenandoah National Park in future years. Old residents of this area state that within their memory they can recall the mountains being well stocked with the white pine.

From the maps made in the field this season and upon which the density and age class of the pine have been coded, the areas shown to have contained pine will be classified. The areas with sufficient pine to warrant protection and justifiably located will be scheduled for future eradication according to their importance. The cost of the survey has been negligible and it is hoped it will prove very useful in future Park work.

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NEW PINE DISEASE FOUND

A new threatening pine disease, a tree canker, is reported by Federal inspectors to be widely scattered over the South, attacking all species of pines. J. D. Diller, forest pathologist of the United States Bureau of Plant Industry, is making a tour of Georgia after visiting Virginia, the Carolinas and Florida. He has found the fungus widely scattered in these States, revealing for the first time that this disease had appeared in the South. According to Diller, other forms of pine canker, less destructive, have been known to exist in the South and may be easily confused by the layman with the new canker. The new disease eats into the wood, frequently girdling and killing twigs. Trunks and larger limbs are more slowly destroyed.

STATE LEADERS APPOINTED IN IOWA, OHIO AND MARYLAND  
H. T. Wright

State leaders have recently been appointed in Iowa, Ohio and Maryland to supervise the blister rust control work in those States. Mr. Donald R. Lubberts, a graduate of the State College at Ames, Iowa, is the new leader in Iowa, his appointment being effective October 16. Since June of this year, Mr. Lubberts has been engaged as Camp Superintendent of the E.C.W. Camp at Creston, Iowa. Mr. Lubberts' headquarters will be at Ames.

Mr. Oscar J. Dowd was appointed State Leader in Ohio on September 1, with headquarters at the Agricultural Experiment Station at Wooster. Mr. Dowd has a B.S. degree from Michigan State College and a M.S. from the Oregon State College.

Mr. Henry E. Yost, a graduate of the University of Maryland, received his appointment as State Leader in Maryland on September 13. Mr. Yost has already taken up his duties in Garrett County, with headquarters at Grantsville. He has been conducting work with NRA funds, using two crews of eight men each and foreman, and working out of Oakland. He reports that up to September 30, 179 acres had been cleared of 18,262 Ribes bushes.

The control of the blister rust in these States is comparatively recent, the disease having been discovered there for the first time in 1931.

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DOES NUMBER OF RIBES FOUND AFFECT INTEREST AND EFFICIENCY OF CREW?  
L. B. Ritter, Minn.

That the interest and efficiency of the C.C.C. eradication crews tend to vary directly as to the number of Ribes present in the area being worked, was the observation of blister rust checker, Ralph Christopherson. Mr. Christopherson was blister rust checker on the Chippewa National Forest during the summer and is now working in the State camp on the Camp Ripley National Guard Reservation. To bear out this observation he cites an instance of a crew laboring without "beefing" or "gold-bricking" after a heavy rain when they were working in a heavy Ribes type. Competition between the men in getting the largest number of bushes and in leaving the fewest was very keen.

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BLISTER RUST FOUND IN POCOHONTAS COUNTY, WEST VIRGINIA  
Roy G. Pierce

Professor George W. Martin, who has been working out of the Seneca Camp north of Huntersville in Pocahontas County, West Virginia, found the blister rust on Ribes near the camp in September. The disease was in the telial stage. Professor Martin has been using from two to four men each day from the Seneca Camp. Control work has been carried on largely on the Seneca State Forest and on adjacent farms to the east.

RIBES INFECTIONS ON THE NEWMAN LAKE STUDY PLOT IN WASHINGTON

A second general inspection of all the Ribes on the Newman Lake Study Plot in Washington was completed on August 8. Of 625 bushes examined, 175 were found to be infected. This number is an increase of 167 bushes since the June inspection but falls considerably below the number of infected bushes found in previous years. This lack of infection is not entirely due to weather conditions but is also due to a paucity in the number of fruiting cankers on the plot. With a very few exceptions, the infection on the Ribes is light and for the most part confined to the leaves on the new growth. Early necrosis is evident in many cases and has caused much defoliation. Telial development has been weak and scant, with the columns becoming dessicated in appearance in the course of several days.

An inspection of all the pines on the plot was completed late in August. A total of 2,184 cankers were found which is an increase of 28 over last year. However, all but six of the new cankers were on old growth and some were of advanced stages. Their belated appearance is probably due to a prolonged incubation in suppressed branches.

During the period from August 1 to August 31, a total of .75 of an inch of rain fell in this region which is probably above normal. The rain was distributed as follows: .41 inches during August 3-5, .25 inches on August 20, and .09 inches on August 30. Conditions favorable for pine infections were ideal on those dates, particularly since the intervening weather was conducive to telial development. Each rainy period was preceded by periods of high temperature and low humidity. There were 10 consecutive days of 92°F. or above, the last eight days being 95°F. and higher. Intensification of the rust on Ribes was at a standstill during this period of excessive heat. (From S. N. Wyckoff's Report of August, 1933)

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BLISTER RUST CONTROL WORK BEING CARRIED ON IN MODEL STATE PARK IN MICHIGAN.

Wm. P. Gleason, Blister Rust Checker, Mich.

One of the many projects now under way in the various C.C.C. camps throughout Michigan is the formation of an entire new State Park situated eight miles north of Ludington and lying between Lakes Michigan and Hamlin. This Park, according to all reports, will be the model State Park in this State. The work is being done by the boys in the Ludington Camp under the guidance of skilled landscape architects. Most of the work consists of clearing dead brush from the virgin forest and clearing spaces for camp sites and bridal paths.

Recently a new project has been added to the camp, that of protecting the white pines from blister rust. The native pines, some standing as high as 150 feet, will offer a beauteous sight to the visitor and camper. So far no blister rust damage has been found in the area, but a crew of C.C.C. men under the guidance of a federal blister rust checker are thoroughly covering the area and eradicating all of the wild gooseberry and currant bushes. It is the sincere intention of all persons in authority that the slogan "Save Our Pines" will be made an actuality in this Park.

LIFE AT A C.C.C. CAMP AT ROUGH RUN, WEST VIRGINIA  
G. U. Wolcott

On August 21 I took fifteen inexperienced C.C.C. boys from Camp #4, Fulk's Run, Virginia, to a "spike" camp just across the Virginia line into Pendleton County, West Virginia. This crew of fifteen consisted of two crews of five men each, two straw bosses, a cook, a K.P. and a truck driver.

Our abode was a Ranger's cabin on Rough Run (which was very aptly named according to the crews). It was a very nice place but the four rooms were somewhat crowded with sixteen army cots, duffle bags, stove and supplies, but we managed to make it quite comfortable. For relaxation we cured rattlesnake and copperhead skins (one crew killed twenty-two cooperheads in one day), played cards in the form of "set-back" and "spank hearts" (a game where everyone learns quickly and tries hard not to lose as the loser is spanked with great relish by the rest of the players).

In the line of work we eradicated Ribes on approximately 606 acres of very rough going along Rough Run and pulled 33,962 Ribes (cynosbati and rotundifolium).

The C.C.C. boys were quick to learn and I believe enjoyed the work and experience very much. They seemed very much interested in the disease and asked many questions that seemed to perplex them at first.

Blister rust disease and control is a new thing in Virginia but I believe that the boys that do know and understand something about the disease will spread their newly acquired knowledge to others in the State.

-----

COOPERATION BETWEEN BLISTER RUST AND WEEVIL CONTROL PROJECTS  
AT CAMP FERNOW IN CONNECTICUT.

B. R. Park, Connecticut

The blister rust and white pine weevil details at Camp Fernow, located on the Natchaug State Forest in Connecticut have found that they can be mutually helpful. For instance, the cost of preparing two field base maps can be reduced by using two prints of the same map prepared by either detail. Again, transportation to and from the job is cut by planning to carry on blister rust and weevil control at the same time in the same areas whenever possible. When hot lunches are served to the men in the field the serving is facilitated by the plan of combining more than one group in a locality.

When it is not possible for the two groups to work the same area simultaneously the details have been helpful to each other in reporting overlooked pine areas, missed Ribes or second generation weevil damage.

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November, 1933

## THE BLISTER RUST NEWS

Issued by the Division of Blister Rust Control and  
the Cooperating States

CONTENTS

	Page
Another Blister Rust Infection Area Found in the Upper Peninsula of Michigan.....	183
Another Motto for N.R.A.....	175
Big Snow Storm Brings Ribes Eradication Work at Superior, Wisconsin, to a Close.....	175
Blister Rust Control in Ohio.....	178
Blister Rust Control Progress.....	173
Blister Rust in Pennsylvania.....	182
Blister Rust Program in Minnesota.....	185
Canadian Interested in Ribes Eradication in the United States.....	181
C.C.C. - B.R.C. Work in Connecticut.....	179
Cultural Foremen on the Alert for White Pine and Ribes in the George Washington National Forest.....	183
Forestry Awards Available.....	185
High Scores in Ribes Eradication in the Southern Appalachians, Season of 1933.....	174
Large Pine Nursery in Michigan Protected from Blister Rust.....	180
Native White Pine in Ohio.....	186
New York Blister Rust Conference - 1933.....	177
1933 Blister Rust Season in Lower Hudson Valley, New York.....	184
One Owner at Least Dislikes Black Currants.....	184
Preliminary Summary of Blister Rust Control Work Performed in the Lake States, 1933 Season.....	179
Publications.....	187
Rust Control No Snap.....	176
Summary of Nira Blister Rust Control Activities in the Northeastern States During September and October, 1933.....	176
Summary of Ribes Eradication Work in Wisconsin During the 1933 Field Season.....	180
The Red Squirrel as an Assistant in Blister Rust Control.....	181
Using Nira Blister Rust Crews in Northern Michigan.....	186
Virginia Notes.....	182
White Pine Mapping in Wisconsin.....	177
White Pine Planting in Minnesota, Fall of 1933.....	186

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BLISTER RUST CONTROL PROGRESS

S. B. Detwiler

Blister rust control has closed its Ribes eradication work for the season. Each region is preparing its summation of accomplishments and arranging its program for the early renewal of activities next season. Although the field personnel is now reduced, everyone is actively engaged in preparing for the 1934 season.

In the Western States men under the Nira program are engaged in mapping, preeradication work, drawing plans, settling camp locations and establishing division plans for the next season. The problem of blister rust control in the Inland Empire is a huge one but the building up of a serviceable operation work plan is well underway with the blister rust men working at the Spokane headquarters. In Oregon one man is planning work for the Prospect Region in the southern part of the State; he will spend part of his time at Spokane and part at Corvallis. In California a total of eight Nira men will continue work all winter and serve as a nucleus for the program of Ribes eradication next season in addition to the regular blister rust forces.

In the Southern Appalachian Region a reconnaissance has just been completed in Garrett County, Maryland. One blister rust man is working on a pine survey in connection with the forest survey in the proposed Shenandoah National Park. Another is working out of Virginia State camps in the vicinity of the Shenandoah National Park. He is working with an assistant at lower altitudes on both sides of the park in Page and Rappahannock Counties. This is in close connection with the adjacent work within the park. Their combined efforts will cover the entire area and provide ample information for future protection of white pine both inside and outside of the scenic area. Another blister rust checker has been working out of Camp Seneca in Pocahontas County, West Virginia, north of Huntersville and has been making side trips into the pine stands in southeastern West Virginia. This work is in cooperation with and at the request of the Chief Forester of West Virginia, Mr. H. W. Shawhan.

In the three Lake States pine location, mapping and preeradication surveys are underway. Ten checkers from the E.C.W. camps are continuing this work in Michigan, five in Wisconsin, and seven in Minnesota.

The Nira men are doing identically the same thing but in areas outside the working radius of C.C.C. camps. This includes five men in Minnesota, four in Wisconsin and seven in Michigan.

As a result of this survey work we will be in a position to protect large blocks of white pine next season and to go at the work with a minimum of lost motion. All information will be assembled this winter on a permanent basis.

In Ohio similar work is being done by one man on E.C.W. funds and by Mr. Dowd, newly appointed State Leader, and two assistants on Nira funds. It is expected that all white pine stands worth protecting in the State will be located and mapped prior to beginning the actual Ribes eradication work next spring.

In Illinois and Indiana, Messrs. Gerdel and Franklin respectively, have just about completed a preeradication survey of the known white pine stands considered worth protecting in the two States. It is proposed to do the protection work on these areas next year, using E.C.W. forces within the work circles of C.C.C. camps, and Nira labor outside of these work circles.

Mr. Donald R. Lubbert has recently been appointed State Leader in Iowa on Nira funds. He will coordinate control activities within the State, locate and map the white pine and develop plans for next season's control work.

We expect that adequate plans for next season's control work will be ready in all white pine States when the spring season opens. All persons involved are exceedingly interested in Ribes eradication work and are enthusiastic in their endeavor to work out an adequate and extensive campaign for 1934 that will result in the protection of more white pine than during the present year. Tentative figures show that during the 1933 season 967,709 acres were cleared of 69,899,253 Ribes by all cooperating federal, State and local agencies, giving in all 1,194,638 man days of labor.

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HIGH SCORES IN RIBES ERADICATION IN THE SOUTHERN APPALACHIANS,  
SEASCN OF 1933.

Roy G. Pierce.

E. H. Francis, Shenandoah National Park, Virginia.....	243,240 bushes
Henry E. Yost, Western Maryland.....	177,470 "
R. M. Beeman, Cherokee National Forest, Tennessee and Georgia.....	62,620 "
G. U. Wolcott, George Washington National Forest, Virginia and West Virginia.....	33,753 "
Professor G. W. Martin, West Virginia State Camps.....	14,273 "
W. J. Cullen, George Washington National Forest, Virginia and West Virginia.....	11,882 "
Hugh Fitzwater and Robert Pennington, Monongahela National Forest, West Virginia.....	2,881 "

Those scoring less than 400 bushes are W. H. Robens of the Unaka National Forest, Virginia and Tennessee; P. A. Swarthout, Pisgah National Forest, North Carolina and Tennessee; Clyde Stevens, Virginia State Camps; Joe F. Manley, Great Smoky National Park, North Carolina and Tennessee; and W. H. Warriner, Nantahala National Forest, North Carolina, South Carolina and Georgia.

BIG SNOW STORM BRINGS RIBES ERADICATION WORK AT  
SUPERIOR, WISCONSIN TO A CLOSE

Harry G. Luer, Wisconsin

The largest October snowfall in 27 years, 7.1 inches on October 23, 1933, brought N.R.A. blister rust control crew work to a close at Superior, Wisconsin, and 48 men were returned to the list of the unemployed.

The blister rust crew work started at Superior on September 13, 1933, in Dietrick Park and on the Billings Estate where approximately 1,200 acres of good white pine were badly in need of protection. Darrel H. Slocum was placed in charge of the work and under him were three foremen and 45 men selected from the local unemployment lists. The city of Superior furnished trucks to haul the crews to work each morning and bring them back to the courthouse at night. The crews worked four  $7\frac{1}{2}$ -hour days each week. Following is a summary of the work accomplished in the 25 working days:

<u>Acres White Pine Protected</u>	<u>Acres Cleared of Ribes</u>	<u>Number of Ribes Pulled</u>
794	855	645,617

A surprise move on the part of the weather brought the work definitely to a close on Monday afternoon, October 23, and left the forests, city and countryside covered with a blanket of snow. Up until this time the leaves were clinging to the Ribes bushes and effective eradication work was being done even though in other parts of the State blister rust crew work had been discontinued for nearly a month. The delayed defoliation was attributed to the influence of Lake Superior on the climate in northern Douglas County.

Mr. Slocum was very much enthused over the cooperation he received from the men on the crews. Even though the eradication work was very difficult and discouraging at times, due to the intermixture of thimbleberry bushes, slough grass, and alder brush with the swamp type Ribes species where the bushes numbered more than a thousand per acre, the men worked conscientiously and vigorously, apparently more than glad to be back at work after a long period of unemployment.

- - - - -

ANOTHER MOTTO FOR N. R. A.  
J. K. Kroeber, Mich.

To Blister Rusters "N. R. A." means only one thing - No Rest Allowed.

SUMMARY OF NIRA BLISTER RUST CONTROL ACTIVITIES IN THE  
NORTHEASTERN STATES DURING SEPTEMBER AND OCTOBER, 1933

E. C. Filler

Blister rust control projects under the Nira program were conducted during September in all the Northeastern States except New Hampshire and New Jersey. Most of the work was confined to Ribes eradication; however, in New York a limited amount of work was done in the treatment of diseased pines. A total of 51,150 man hours of work was performed by laborers. In addition, 1,484 man days of temporary employment were given to other men used on special work and in a supervisory capacity. The total efforts resulted in 23,280 acres being cleared of 663,139 wild Ribes. Also, the men in New York State removed 3,182 living pines which had stem cankers, pruned the branch cankers from 13,219 other pines and cut 197 dead pines which had been killed by the rust.

During October, the activities of the temporary men employed on blister rust control under the Nira program were restricted chiefly to the mapping of pine and control areas in New Hampshire, New York, Vermont, Maine and Massachusetts. A small amount of special Ribes eradication was also performed in New York, Rhode Island, and Connecticut. In the latter two States, it was carried on in connection with the elimination of Ribes nigrum while in New York it was confined to eradicating concentrations of large bushes. The project on the treatment of diseased pines was also continued in New York during October. These activities produced 4,862 man hours of employment for laborers, and 822 man days of work for 29 additional men engaged chiefly in mapping.

Ribes eradication in New York during October resulted in 32,666 Ribes being destroyed on 580 acres. In Rhode Island, an inspection was made of 16,034 properties in the City of Providence and 280 Ribes nigrum were located and destroyed. This black currant work completed the project of removing all such bushes from the State. In Connecticut, an additional rural town was freed of Ribes nigrum. The project on the treatment of diseased pines in New York resulted in the removal of 10,220 living pines which had stem cankers, the pruning of branch cankers from 32,223 other pines and the cutting of 2,866 pines which had died from the disease.

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RUST CONTROL NO SNAP

(Extract from the Forestry News Digest, October, 1933.)

Blister rust control is no "sissy's job", the boys of Dorrington Camp, Stanislaus Forest, California, have learned after thoroughly covering the 1,260 acres of wooded and brushy slopes, uprooting 25,000 gooseberries and 2,000 currants. A man must learn "to take it" when digging gooseberries. For hours at a time, perhaps, he may have to fight his way through brush uphill with an empty canteen on his belt and no water nearby. With his trusty eradication pick or "bat" as it is familiarly named, he makes his way, digging out all Ribes in his path though they may be under logs, rocks, or in the midst of thicket brush. The sun may burn, the thorns may prick him, the hills may get steeper and steeper, yet he goes on working to save Uncle Sam's white pines.

WHITE PINE MAPPING IN WISCONSIN  
T. F. Kouba, Wis.

Since the termination of Ribes eradication work for this season in the E. C. W. camps, foremen assigned to do blister rust work in the various camps have been doing white pine mapping. Some of the foremen have been using C.C.C. boys in this mapping work and have established side camps in order to reduce the mileage and extend the working period. This arrangement seems to be very satisfactory and has increased the efficiency of the preeradication survey work.

A heavy snowfall in the northern part of Wisconsin slowed down the pine mapping in the northern counties. The C.C.C. boys were not equipped for snow and consequently were kept indoors. The blister rust foremen, however, continued working without the aid of these boys.

During October nine blister rust foremen working from E.C.W. camps mapped approximately 8,000 acres of good white pine, obtained data on the prevalence of Ribes, and submitted their recommendations for eradication work next spring.

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NEW YORK BLISTER RUST CONFERENCE - 1933  
H. G. Strait, N. Y.

The New York agents held their annual blister rust conference at the State Office Building in Albany on November 16 and 17. No field trips were included in this year's conference. Mr. McIntyre acted as chairman of the meeting. Guests from outside the State were: Mr. E. C. Filler of the Boston Office, and Dr. J. F. Martin and Mr. A. E. Fivaz of the Washington Office.

Reports were given by the agents on the results of the past season's work and various phases of these reports were discussed at this time.

Commissioner Lithgow Osborne gave a short address. He pointed out that blister rust is an insidious disease that does not destroy the pines in a manner that is sufficiently spectacular to attract public attention and therefore the public must be brought to a realization of its importance through a general educational movement on the part of the blister rust organization. He recognized the value of the work to the public and stressed the importance of continued efforts in the suppression of the destructive work of this disease.

Mr. William G. Howard gave a very interesting talk on the conservation movement in New York State, particularly relating to the new phases of forestry work that had been taken up during the past year.

Dr. Martin gave his experiences in working with the C.C.C. camps doing blister rust work in the Central and Lake States. He also gave some helpful suggestions on control work in this State.

Mr. Filler spoke regarding the N.R.A. program relating to conditions in the Eastern States and gave a brief summary of the work accomplished this summer. Mr. Fivaz gave some helpful suggestions regarding the work and offered some timely hints on a long range system of planning, and Messrs. Littlefield and Eliason gave a report on their investigations relating to blister rust.

During the meeting the agents were assigned various subjects relating to major problems in the work, which brought up angles that otherwise might have been overlooked.

On the evening of the 16th dinner was served at Jack's Restaurant after which a very enjoyable meeting was held.

-----

#### BLISTER RUST CONTROL IN OHIO

(Extract from "Forest News", Ohio Forestry Dept., Nov. 1933)

This autumn, in connection with its huge Nation-wide public works program, the Federal Government began a project aimed to protect the white pine in Ohio. In the original forest, white pine occurred in considerable quantity in this State, but today there are only two areas left where there are any native trees of this species. The largest area is along the Mohican River, comprising a strip about thirty miles long and a mile wide. The other tract is the Little Mountain area in northwestern Geauga County, of about a square mile in extent. On both of these areas, the white pine occurs in blocks of pure and mixed stands.

White pine is threatened with a disease, white pine blister rust, which will destroy this species completely if allowed to continue unchecked. A positive control measure for this disease however, is the removal of all species of Ribes from an area surrounding the pine. The Federal Government has set aside a part of the public works appropriation for the eradication of currants and gooseberries from the immediate vicinity of the important white pine areas of this country.

In Ohio, a State Leader, Mr. O. J. Dowd, has been appointed who has charge of this work in this State, and work commenced early in September. Crews were selected from unemployed men, and one month of work was accomplished before the leaves fell, and will be continued next spring.

Not only are the areas of native white pine to be protected, but the important plantations of this species will also be scouted and where needed, work will be done.

PRELIMINARY SUMMARY OF ELISTER RUST CONTROL WORK  
PERFORMED IN THE LAKE STATES, 1933 SEASCN.

H. N. Putnam

White pine blister rust control work in the North Central and Lake States Region was carried on in 1933 under the Emergency Conservation program and the National Recovery program. In addition, Ribes eradication was performed in connection with county welfare relief work and regular cooperative control work in the affected States. In the following two tables are shown summaries of the work done, exclusive of nursery sanitation, based on preliminary reports from State Leaders. While these are not final figures, they are substantially correct.

Acres Cleared of Ribes, Exclusive of Nursery Sanitation,  
North Central and Lake States Region, 1933.

State	Acres Eradicated of Ribes			
	E.C.W.	N.R.A.	Regular	Total
Michigan	42,381	2,498	2,979	47,858
Wisconsin	49,711	855	4,157	54,723
Minnesota	18,174	0	465	18,639
Ohio	866	1,728	0	2,594
Iowa	2,558	0	0	2,558
Illinois	0	0	1,350	1,350
Indiana	3,913	0	0	3,913
Region	117,603	5,081	8,951	131,635

Summary of Ribes Eradication Work, Exclusive of Nursery Sanitation,  
North Central and Lake States Region, 1933.

Item	E.C.W.	N.R.A.	Regular	Total
Acres White Pine Protected	53,887	2,008	2,755	58,650
Acres Cleared of Ribes	117,603	5,081	8,951	131,635
Number Ribes Pulled	8,020,066	827,446	737,365	9,584,877
Man Days Labor	27,686	2,575 $\frac{1}{2}$	1,820	32,081 $\frac{1}{2}$

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C.C.C. - B.R.C. WORK IN CONNECTICUT

Mr. R. M. Ross of the Connecticut Forest and Park Association, in an article on C.C.C. work in Connecticut, which appears in the September issue of the Forestry News Digest, writes that approximately 250 men are assigned to the blister rust project in that State, 36 men working out of each of the seven camps. He continues, "These crews are combing the white pine tracts, pulling and hanging up to die the currant and gooseberry bushes. Up to August 1 these boys have eradicated Ribes from 9,451 acres. The total number of bushes destroyed amounts to 93,162."

LARGE PINE NURSERY IN MICHIGAN PROTECTED FROM BLISTER RUST  
Carroll C. Foster, Michigan.

Considerable work is being done by C.C.C. crews under the supervision of the Michigan Department of Agriculture to control white pine blister rust. Among the areas protected in Michigan is the famous Hartwick Pines in Crawford County near Grayling, a 57 acre stand of virgin white pines. This is one of the few such stands left and is now devoted to use as a State Park.

Another protected area is the Roth State Nursery of Crawford County, on the North Shore of Higgins Lake. This is a 25 acre nursery, 16 acres of which are devoted to pine seedlings. Under this year's curtailed production the inventory shows over 9,000,000 seedlings of white, Jack and Norway pines, to be transplanted throughout the State in the future. 1,000,000 trees will be planted by the Highway Department in this year's program.

To thoroughly protect this important area 157 acres of land were covered (132 acres surrounding the nursery) in the search for the host plant. Of this land 112 acres were practically free of Ribes, but they ran heavy in a 45 acre area in which three C.C.C. crews pulled a total of 20,585 bushes in the second eradication.

(October 25, 1933)

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SUMMARY OF RIBES ERADICATION WORK IN WISCONSIN  
DURING THE 1933 FIELD SEASON  
T. F. Kouba, Wis.

Ribes eradication work in Wisconsin came to a close on October 23, 1933, when the crews at Superior, Wisconsin, hired under the National Recovery Act, ceased work because of a heavy snowfall. The last Civilian Conservation Corps Camp had brought eradication work to a close by September 30, but at Superior, because of favorable air currents from Lake Superior which made possible effective Ribes eradication later in the season, control work was in progress until the unexpected snowfall arrived.

The following data summarize the results of Ribes eradication work in Wisconsin for 1933:

No. of Acres of White Pine Protected.....	20,898
No. of Acres of Land Eradicated of	
Ribes (includes protective zones).....	55,559
No. of Ribes Bushes Pulled.....	4,586,821

The blister rust foremen in the C.C.C. Camps, as well as three agents appointed under the N.R.A., are now doing pine mapping. Douglas, Burnett and Langlade Counties have already been mapped since the close of the eradication season.

THE RED SQUIRREL AS AN ASSISTANT IN BLISTER RUST CONTROL  
H. J. Ninman

On September 3, 1931, a seedling Ribes missouriense, two inches high and with two inches of live stem and eight leaves, was staked for the purpose of studying its growth along with other Ribes seedlings similarly staked. In 1932 this bush contained three and one-half inches of live stem with six leaves. The bush was located within two feet of a white pine of medium size on the east, and near the decaying end of a large white pine log on the west. The decaying particles of the log and the pine needle duff made a nice soft spot in the sandy loam soil for the Ribes bush to grow. On September 22, 1933, the spot was inspected. A hole about three inches deep and four inches in diameter was found in the spot where the bush was located previously. On the sides of the hole and around it fine scratches were numerous. The scratches were such as are common where a red squirrel has been working. Six inches south of the center of the hole was found one-half inch of green Ribes stem with five attached leaves which had just begun to wilt. The rough end of the stem showed that it had been severed by gnawing. The greater portion of the stem and the roots could not be found. Fragments of pine cones were numerous in the surroundings. The writer feels certain that a red squirrel destroyed the Ribes bush.

From time to time in previous years the writer has found small holes in the ground where staked Ribes of small size were destroyed, and has suspected that red squirrels were responsible for the work. The incident above described leads him to believe that the little mischief of the forest is at least a miniature factor in blister rust control.

(November 7, 1933)

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CANADIAN INTERESTED IN RIBES ERADICATION IN THE UNITED STATES

Mr. James R. Dickson of the Forest Service, Department of Interior, Ottawa, Canada, in letter of October 20 expresses his interest in Ribes eradication in this country, and especially in the number of Ribes found per acre. He writes:

"It interests me very much to note by the September Blister Rust News that the average run of Ribes per acre in your Eastern States was from 25 to 45, and in Idaho 325; whereas on the four square miles of sandy pine land I covered on our Petawawa reserve, the average was only three per acre (which it cost about ten cents to uproot). No doubt in case of a loam or clay soil the Ribes population would be much greater. Certainly, if you find it a feasible proposition to eradicate or control such numbers of Ribes, there should be no question of the work being good business under anything approaching the conditions I met with last summer."

VIRGINIA NOTES

Roy G. Pierce

Mr. Clyde Stevens, blister rust checker working out of State Camps in Virginia, has recently reported blister rust on gooseberries near Pignut Mountain in Rappahannock County, Virginia. The infection was found while scouting for pine in areas adjacent to the proposed Shenandoah National Park. It may be remembered that one of the first infections discovered in Virginia was found at Thornton's Gap in Rappahannock County by Messrs. Hodgkins and Geiser in 1931. Mr. R. A. Sheals of the Bureau of Plant Quarantine reported the blister rust on Ribes in Page County, Virginia, a mile or so west of Thornton's Gap in August. These two infections, together with the infection on pine and Ribes found by E. H. Francis in the proposed Shenandoah National Park along Skyline Drive, and that found on pine and Ribes by W. J. Cullen in George Washington National Forest along North River, make four new centers of infection found in Virginia this year.

While Mr. Woodward, a local man from the camp at Sperryville, Mr. Stevens and myself were scouting for white pine in Page County during the early part of this month, we were almost run down by a small gray fox and a pack of hounds that were following said fox in full cry. Earlier in the season Mr. Cullen coming into town from the camp one evening, almost ran down a black bear on the road. Such sights and sounds as these make the life of a blister rust man in the woods exceedingly interesting at this time of year.

-----

BLISTER RUST IN PENNSYLVANIA

(Extract from the Forestry News Digest, October, 1933.)

One of the greatest accomplishments of the Civilian Conservation Corps in Pennsylvania during the summer was the protection of some 31,000 acres of woodland from the deadly white pine blister rust, reported George H. Wirt, director of the Bureau of Forest Protection in the Department of Forests and Waters.

Up until the end of September at which time the work of eradicating the Ribes bushes closed for the fall, the emergency forest workers had devoted a total of 33,600 man-days of labor to this project and dug up and destroyed more than two million currant and gooseberry plants.

Four of the new Civilian Conservation Corps camps approved for Pennsylvania will be placed under the supervision of the department according to Secretary Lewis E. Staley. Establishment of these camps will bring the total number in Pennsylvania to 104.

ANOTHER BLISTER RUST INFECTION AREA FOUND IN THE  
UPPER PENINSULA OF MICHIGAN

J. K. Kroeber, Mich.

While looking over pine stands in Dickinson County, Michigan, Mr. Mandenberg, Mr. Kowatch (pine mapper) and I found another pine stand infected with blister rust. This stand is located within two miles of the city of Iron Mountain, and is an excellent example of what blister rust can do to reproduction. The area covers about seventeen acres and has trees ranging from seedlings to veterans.

Time and weather conditions have prevented our making a thorough study of the extent of the damage but we estimate that fully a third of the young trees are infected. A general absence of very young seedlings seems to indicate that this class of reproduction was destroyed before it became conspicuous. The oldest infection found in this area was on 1927 wood and the trees seem to have become diseased every year since, although the spread seems to have been most prevalent between 1927 and 1930.

In going over our cultivated black currant eradication records for Dickinson County we found that several Ribes nigrum were destroyed within three eighths of a mile of this stand in 1930. Apparently we were three years too late in removing this menace. The spores seem to have hit close to the ground, since we were unable to find any infection on pine above eight feet although there are many larger trees in this stand. A swamp full of Ribes occurs within 500 feet of this stand. No eradication work other than removal of cultivated black currants has been done.

Edit: Mr. E. C. Mandenberg, State Leader in Michigan, in commenting on this infection area, states:

"This is an ideal place for a demonstration area and we are taking steps to interview the owners to try to get their permission to use this area for demonstration purposes. It is handier than any demonstration area that we have and more spectacular. We have already tagged all the trees that have cankers on them."

- - - - -

CULTURAL FOREMEN ON THE ALERT FOR WHITE PINE AND RIBES  
IN THE GEORGE WASHINGTON NATIONAL FOREST

(Amendment to Instructions to Cultural Foremen, by J. W. McNair,  
Forest Supervisor, George Washington National Forest.)

All cultural foremen will be on the alert for areas containing white pine and will keep a record of such areas encountered. Records will include a map of the Forest, showing the approximate location of the tract, and a memorandum of the area involved and the number of white pine per acre. This memorandum should also show the size of the white pine and its distribution, as well as what the remainder of the stand consists of. At periods of the year when it is possible to recognize Ribes, a further statement should be made relative to their number per acre and distribution.

1933 BLISTER RUST SEASON IN LOWER HUDSON VALLEY, NEW YORK  
H. G. Strait, N. Y.

The blister rust season closed in the Lower Hudson Valley District on the 15th of September. The year has been about normal taking it as a whole. However, a protracted drought during the midsummer caused considerable damage to *Ribes* leaves. Rains in August revived them and the latter part of the season was very favorable to eradication. The procedure of eradication was similar to previous seasons here. There were no C.C.C. camps in the District, hence the usual scout system was used to a large extent. Cooperation was obtained in several instances where it was needed.

The work was confined to Greene County where it was left off at the close of last year. Most of it was on natural seeding of pine. But few white pine plantations have been made in this county. The reproduction of young pine is prolific in nearly all cases where seed trees are located. There is a good deal of abandoned land in this section and pine is reclaiming many of these old fields.

Gooseberries and black currants (*Ribes americanum*) were the chief species found this year. The gooseberries were generally infected but not much infection was found on the black currants. Blister rust is prevalent on all white pine stands in this section, but few heavy infections were seen. It is believed that the gooseberries found along stone walls and in openings are largely responsible for most of the disease on the pine.

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ONE OWNER AT LEAST DISLIKES BLACK CURRANTS

W. R. Roop, Mass.

We are so accustomed to finding the owners of black currants enthusiastic about such bushes that we were rather surprised recently to receive the following letter from one owner:

"Dear Sir:

The writer found your card #270 at his house at 87 Upham Street recently requesting that two European black currant bushes be pulled up and destroyed.

Some three or four years ago, the writer had the bushes cut down and dug up, and built a garage over one of them, but you will note the bushes now growing out from under the garage, and the other has grown up also.

If you can give me some effective method of killing these bushes, I shall be very glad to do so, as personally I do not even like the smell of the things.

Very truly yours,

(Signed) B. A. McK. "

BLISTER RUST PROGRAM IN MINNESOTA

L. B. Ritter, Minn.

The National Industrial Recovery Act provides for a program of public works to aid in the relief of unemployment. The Division of Blister Rust Control of the Bureau of Plant Industry has been allotted a sum of \$2,050,000 for carrying on blister rust control work on lands other than Federal. Seventy-five thousand dollars has been tentatively allotted to Minnesota. Since the purpose of the public works program is to provide employment, the greater share of Minnesota's allotment will be expended the coming field season in the hire of laborers for Ribes eradication.

The supervisory force of this program consists of six men who are now on the job preparing for next summer's eradication season. The work being done this fall and winter consists of the mapping of white pine stands and making preeradication surveys. It is hoped that through this program and the E.C.W. program to complete the mapping of Minnesota's some one million acres of white pine this year. With the exception of woodlots and stands having scenic value, tracts of less than twenty acres are not considered worth the cost of protection. Since white pine in this region is typically a mixed stand tree, it was necessary to set up an arbitrary minimum number of trees per acre that would be considered worth protection costs. These minimum numbers are: 50 trees per acre in stands 20 to 40 years old; 100 trees per acre in stands 10 to 20 years old; 200 trees per acre 0 to 10 years old.

White pine mapping has already been completed in southeastern Crow Wing County, northern Mille Lacs County, and Aitkin County. Work is now in progress in northeastern Crow Wing County and Carlton County.

During the coming eradication season approximately 100 men will be employed on eradication crews. All white pine stands of a sufficient size and stocking, both of State and private ownership, will be protected. The work will begin in the southern part of the white pine areas where blister rust is more prevalent and will be continued as far north as time and available funds will permit.

(From the "Smoke Screen", October, 1933.)

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FORESTRY AWARDS AVAILABLE

Announcement has just been made by the Charles Lathrop Pack Forest Education Board that it is now receiving applications for its fifth annual award of fellowships for training leaders in forestry. Five fellowships will be available this year and will range from \$500 to \$1,500, although in special cases higher sums may be authorized by the Board. Applications will be received by the Board until December 31, 1933, and should be made on forms supplied by the Board. These forms, as well as further information concerning the fellowships, may be secured from the Secretary, Tom Gill, 1214 Sixteenth Street, N.W., Washington, D. C.

WHITE PINE PLANTING IN MINNESOTA, FALL OF 1933

In the planting program carried on this fall by the E.C.W. Camps in Minnesota, a total of 186,200 white pine seedlings from one to three years of age, were planted at the following locations:

George Washington Memorial Forest .....	29,000
" " " " (Seedlings for transplant beds) .....	100,000
Jay Cooke State Park .....	35,000
Finland State Forest .....	15,000
Savanna State Forest .....	3,200
Third River State Forest .....	<u>4,000</u>
	186,200

Proposed planting areas were scouted for gooseberries and currants and wherever these plants were found they were destroyed. This step was necessary in order to reduce the chances of blister rust infecting the stand.

(Data from the "Smoke Screen" for Oct. 1933)

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NATIVE WHITE PINE IN OHIO

State Leader O. J. Dowd of Ohio, who spent the early part of November scouting for white pine and Ribes, reports a large area of native white pine in the northern part of the State. He writes:

Found an unreported area of native white pine along the Vermilion River about four miles southeast of Vermilion, Erie County. This pine is located along the banks of the Vermilion River and its tributary, Chance Creek, from about two miles north of Rugby up-stream approximately 18 miles to Birmingham. This area of approximately 2,500 acres includes much native pine which is reseeding itself (351 counted on one acre), and approximately a dozen plantings of white pine. Ribes are scarce on one bank of the river and medium in number on the other bank. Pine owners along the river are much interested in future plantings. The area is recommended for blister rust control work.

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USING NIRA BLISTER RUST CREWS IN NORTHEFN MICHIGAN

J. K. Kroeber, Mich.

We succeeded in putting twenty-four NRA men to work on wild Ribes eradication this season. Work was done in three counties. We got started late and only worked the men two weeks and then were forced to discontinue it because of Ribes conditions. However, even this short period of dealing with this type of labor has given us valuable experience which will serve to guide us in next season's drive. We found that at the rate we paid we were able to get very good men.

We followed instructions as given in ERC-NIRA Circular No. 1, selecting unemployed men best suited for the job and living close to the pine areas to be protected. The men seemed to take a personal interest in the work since the pine was close to their homes.

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Crüger, O. - Vorzeitiges Absterben der Johannisbeerblätter. (The premature dying of the leaves of gooseberry). Kranke Aflanze, Vol. 10, p. 106-107. July-August 1933, No. 7-8. Pseudopeziza Ribis.

Hepting, George H. - Eastern Forest Tree Diseases in Relation to Stand Improvement. Emergency Conservation Work Forestry Publication No. 2. Section on white pine blister rust on pages 19 to 21. (This publication presents in clear, readable form a wealth of information upon forest tree diseases in the East. The diseases discussed are classed under four general sections: Heartrot diseases, bark diseases (cankers), plantation diseases, and threatening introduced diseases.)

Kunkel, L. O. - Pests Away from Home. Scientific Monthly 37:454-456, Nov. 1933, No. 5. Chestnut blight, white pine blister rust.

Ritter, L. B. - Blister Rust Program. The Smoke Screen, October 1933, Vol. IX, No. XII.

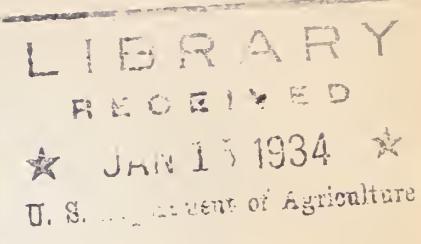
Smith, Harry G., Essig, Edward O., and others - The Efficacy and Economic Effects of Plant Quarantines in California. Bulletin 553, July 1933, University of California, College of Agriculture, Agri. Exp. Station, Berkeley, California. 276 pages, illus. White pine blister rust control, pages 211-214. (Those interested in quarantine bulletins will find the above publication, which is a report by a committee consisting of H. G. Smith, E. O. Essig, H. S. Fawcett, G. M. Peterson, H. J. Quayle, R. E. Smith and H. R. Tolley, one of the best ever written on the subject of quarantines.)

Young, Donald - A Thinning and Pruning Operation (on white pines) in the Appalachians. Forest Worker, July 1933.

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December, 1933

## THE BLISTER RUST NEWS

Issued by the Division of Blister Rust Control and  
the Cooperating StatesCONTENTS

	<u>Page</u>
A Preliminary Report on Blister Rust Control in Seneca and Watoga State Forests, West Virginia.....	192
A Word of Praise Now and Then, Etc.....	193
An Old Mapping Method Modernized.....	202
Automobile Insurance.....	205
Blister Rust Control Aids in the Relief of Winter Unemployment Under the C.W.A. Program.....	190
Blister Rust Control in Maryland.....	191
Blister Rust Control Incorporated in New Division.....	189
Blister Rust Notes from Rhode Island.....	194
Chronology of the Massachusetts CWA-BRC Project.....	195
Control Work in District #11, New York.....	203
Great Quantities of Twine and Chemicals Used by CCC Forces in Northern Idaho in Eradicating Ribes.....	204
Indians Apply Blister Rust Control Measures.....	196
Inspection Trip in Northern Pennsylvania.....	200
Massachusetts Civil Service Commission Announces Examination for Blister Rust Inspectors.....	204
Massachusetts Starts a CWA-BRC Project.....	199
Merry Christmas and a Happy New Year.....	189
Oddments.....	191
Pine Needle Scale Found on White Pine in Pennsylvania.....	199
Publications.....	205
Ribes Grow Large in Oregon.....	198
Ribes Run 5,000 to 10,000 Per Acre in Swampy Area in Ohio.....	193
Ribes Scarce in Great Smoky Mountain National Park, Tennessee.....	193
Summary of NRA - BRC Work in Ohio.....	200
What C.C.C. and N.R.A. Have Meant to B.R.C. in Worcester County, Massachusetts.....	201
White Pine Makes Good Growth on Light Land.....	205

U. S. Department of Agriculture  
Bureau of Plant Industry  
Division of Blister Rust Control  
Washington, D. C.

MERRY CHRISTMAS AND A HAPPY NEW YEAR

The Washington Office extends best wishes for a Joyous Christmas and a Happy New Year to the blister rust personnel, to our cooperators, and all other readers of the Blister Rust News. May we take this opportunity to express our thanks for the cooperation given us during the past year

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BLISTER RUST CONTROL INCORPORATED IN NEW DIVISION

Dr. W. A. Taylor in B.P.I. Memo. 746, dated December 1, 1933, gives the following information concerning the establishment of the new Division of Plant Disease Eradication and Control of which Blister Rust Control will be a part:

"In accordance with the instructions received from the Assistant Secretary, effective today (December 1, 1933) the Division of Plant Disease Eradication and Control is established to include the following appropriations and all allotments from either Public Works Funds or Civil Works Funds made for the work covered by these appropriations:

Barberry Eradication  
Blister Rust Control  
Citrus Canker Eradication  
Dutch Elm Disease Control  
Phony Peach Eradication

The Division of Plant Disease Eradication and Control will be under the supervision of Dr. K. F. Kellerman, who will report directly to Mr. Lee Strong, Chief of the Bureau of Entomology and Plant Quarantine. It is expected that on July 1, 1934 the appropriations concerned will be consolidated with the appropriations for the Bureau of Entomology and Plant Quarantine, of which the Division of Plant Disease Eradication and Control will then be a unit."

BLISTER RUST CONTROL AIDS IN THE RELIEF OF WINTER  
UNEMPLOYMENT UNDER THE C.W.A. PROGRAM.

J. F. Martin

With the recent inauguration of the Civil Works Program several of the States cooperating in the control of the blister rust disease included this work as one of the State projects on which the unemployed could be used to advantage. Some of these projects have been approved and C.W.A. blister rust work is now underway in Iowa, Wisconsin, Massachusetts, New Hampshire and Connecticut. The work includes the location and mapping of areas of white pine in preparation for Ribes eradication during the coming growing season, the location, and where possible, the removal of R. nigrum as a general control measure and the treatment of white pine plantations to salvage infected trees by removing diseased branches. This work supplements our regular control activities and there is no overlapping or duplication of effort.

In Connecticut Mr. Riley has 60 men employed on a survey to obtain data necessary for the systematic eradication of R. nigrum and other cultivated Ribes located within infecting distance of white pine. The work will be carried on in the remaining 25 townships where this work is necessary for the protection of the pine. These towns have been grouped into four districts comprising five to seven towns each. Each district will have from 10 to 14 C.W.A. employees who will work under the supervision of an experienced man.

Mr. Perry has 130 C.W.A. employees on blister rust work in Massachusetts. These men are divided among the four district agents, who direct and supervise their work. Some of these men are salvaging infected pines in plantations on State and municipal lands and others are preparing control area maps or locating R. nigrum in unworked towns.

In Wisconsin Mr. Kouba has 40 unskilled and 10 skilled laborers doing pine location and mapping work in 10 districts in the State. One skilled laborer is assigned to each district to make the maps. The unskilled are divided into 4-man crews, one to a district and after suitable training gather the field data on pine location, stocking, Ribes conditions and other pertinent facts.

State Leader Lubberts in Iowa is organizing and starting work with 10 crews of two men each. The work will include the locating and mapping of white pine stands and white pine shelterbelts. The latter are very important in parts of Iowa because they furnish protection for buildings and crops, provide shade in summer and have a high ornamental value.

In New Hampshire, Mr. Newman and the district agents are busy supervising the work of 1,500 C.W.A. employees in addition to their regular duties. These men are engaged on several different forestry projects including blister rust control work.

BLISTER RUST CONTROL IN MARYLAND  
H. E. Yost, Md.

Ribes eradication work on forest land was started in Maryland on September 21, 1933. Prior to this date blister rust control activities were confined to scouting and nursery sanitation. Surveys made by the regular personnel of the Division of Blister Rust Control revealed the presence of about 15,000 acres of white pine, principally in Garrett, Allegany, and Washington Counties. Numerous wild Ribes, mainly the roundleaf gooseberry and the skunk currant, were reported in Garrett County where elevations reach 3,000 feet. Few if any were found below 1,500 feet. Cultivated Ribes were found in practically every garden.

Only a few scattered blister rust infections were found, principally from Allegany east, and almost entirely on Ribes. The rust has been found in Pennsylvania and West Virginia within "striking distance" of the Maryland State boundary lines.

The N.I.R.A. appropriation in August made possible the Ribes eradication work. In order to expend our funds efficiently, eradication was begun where much crew work was known to be required, which was in the vicinity of Oakland in Garrett County. 1,890 acres were covered and 177,470 Ribes were pulled. Practically all were wild gooseberries and skunk currants, and their eradication was carried on by crews. An exceptionally late fall made it possible to continue eradication work up to October 25. One new infection center was found near Oakland in Garrett County, which is the only one found to date in that county, but others probably are present.

Since eradication work was suspended, the activities are confined to locating and mapping white pine and Ribes, and securing cooperation of owners of white pine for work next spring. The work is particularly timely in Maryland as very little blister rust is present and much of the white pine is so small that if the disease is not controlled the result will probably be very serious. Members of the State Forestry Department and residents state that the white pine is definitely "coming back", especially during the last ten years. The scouting thus far has substantiated this opinion. Frequently a casual observation reveals only a few scattered white pines growing principally in oak and scrub pine. However, when carefully scouted, the same ground will be found to have from 100 to 500, and sometimes more, white pine per acre less than six feet high. Every effort is being made to complete the initial eradication and it is hoped that adequate funds and legislation will be provided to protect and bring to maturity this crop of valuable timber rather than permit it to go the way of the chestnut.

-----  
ODDMENTS

If "variety is the spice of life" we have had plenty of spice (ECW - CCC - NIRA - PWA - CWA) in the blister rust control "life" of 1933.

A PRELIMINARY REPORT ON BLISTER RUST CONTROL IN  
SENECA AND WATOGA STATE FORESTS, W. VA.  
G. W. Martin, W. Va.

The eradication of Ribes in this district began on September 12, 1933, with Seneca Camp leading off and recently finished, and with Watoga Camp now in the process of similar work. In spite of defoliation, we are yet doing good work in the eradication of Ribes. In our eradication work from the beginning to date we have followed the parallel-strip method of procedure. By this I mean that the crew advances, so many feet apart depending on many conditions, working in more or less zigzag fashion and proceeding as a unit, with myself following closely behind and checking up. I have found this method very satisfactory.

The Seneca State Forest was pretty badly infested with Ribes (rotundifolium and cynosbati). We found some leaves infected with the blister rust in the telial stage, but in all our investigations we found no infection on white pine. In the Seneca Forest we eradicated about 14,000 Ribes, and the only areas investigated were those in close proximity to white pine sections of promising economic value.

The Seneca and Watoga State Forests, without doubt, are the coming sections of white pine, not only in Pocahontas County but in the whole State, and will be among the greatest assets of West Virginia. The conditions here seem well adapted to white pine growing. A cursory glance at the number of stumps left from the first cutting of native pines and their diameter would convince any one of the aforesaid statements.

It may be noteworthy to say that we found Ribes distributed at all elevations from 2600 to about 4000 feet, the highest point being the crest of Michael Mountain. The most favorable places for Ribes growth were on northern exposures of ridges well watered by streams at their bases and whose sides consisted of shale or a rock make up. Also, it was noticed that Ribes seemed more abundant where hemlock predominated as a forest cover. Just why this relationship, I cannot say but it must be an ecological problem.

In so far as my observations have gone in the few days spent at Watoga State Forest, I believe this section will almost duplicate the results obtained at the Seneca State Forest.

It might be well to say that good results in eradication work depend on many conditions, such as, 1, the attitude of the crew, that is whether they are interested in such detail work, etc.; 2, the kind of men in the crew, whether they are mere "pick-ups", or men who are more or less mature and with some training in the higher schools or colleges; and 3, the one who has the work in charge, whether he himself is really interested in the work and possesses the necessary qualifications.

To conclude, great credit is due to the C.C.C. camp officers and boys for what they have done, and the results accomplished thus far. We anticipate still greater results in the future when the work is better organized and more efficient.

"A WORD OF PRAISE NOW AND THEN, ETC."  
C. C. Perry, Mass.

A landscape designer and regional planner of national repute, recently spent a day in the field with our Agent Roop. His comment, given below, is worthy of note:

"I had a fine day with Mr. Roop, that active young man whose age tops my own of 75 by a year or more. If you have covered the State with men of equal knowledge of native plants, birds, etc., you must have a most efficient force.

"I was impressed by his inability to find any new specimens of blister rust on our trip. He sure has done his part of the job well."

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RIBES RUN 5,000 TO 10,000 PER ACRE IN SWAMPY AREA IN OHIO

Mr. Oscar J. Dowd writes that while making a preeradication survey in the vicinity of Mansfield and Lexington, Ohio, on November 28, he found a swampy wooded area of at least 20 acres in which black currant (Ribes americanum) have established themselves at the rate of 5,000 - 10,000 per acre. Apparently this spread has come from two long rows of planted black currants at the edge of the woods adjoining a 70-year old cemetery in which there is a fine white pine windbreak 20 years old.

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RIBES SCARCE IN GREAT SMOKY MOUNTAIN NATIONAL PARK, TENNESSEE

Mr. Joe F. Manley, formerly blister rust checker in the Great Smoky Mountains National Park in Tennessee, writes in a recent letter:

I have made another trip down Abrams Creek in Tennessee but found no Ribes. There are fine white pines all the way down this stream and on the slopes of Cades Cove; young pine is coming in densely under the hard-wood overstory. In no place have I seen white pine reproduction so tolerant, and this territory is Ribes-free.

Two camps that were on blister rust control work in Idaho have come into the Park, and I plan to take four of their men down on the Little Tennessee River tributaries throughout the Park and search for Ribes as soon as the weather breaks a little. Although I have been in this territory twice, I believe that if there are any Ribes in the locality we can find them since these boys know the work.

BLISTER RUST NOTES FROM RHODE ISLAND

A. W. Hurford, R. I.

The Rhode Island blister rust control program has taken rapid strides during the past year. This development has been in public education as well as in actual control work. The emergency conservation and Nira projects, with their widespread publicity, have given the public more information about blister rust control than it has been possible to give over a period of years under the regular program. Under local conditions it is sometimes just as important to obtain the general support of the public as it is to destroy Ribes. This is true because blister rust control has been so maintained to date in Rhode Island that there is little chance for widespread pine infection unless, through lack of public cooperation, currant and gooseberry bushes or diseased pines are planted in restricted areas.

The emergency conservation work program started too late in the year for the seasonal records to be exceptional. Approximately 5,023 acres were scouted for currants and gooseberries and approximately 3,427 of these bushes were found and destroyed. This emergency conservation blister rust control work was carried on in the towns of West Greenwich, Gloucester and Charlestown. The problem of training green men under this program was made difficult partly because of the scarcity of Ribes and partly because it was impossible to keep the same men on the job throughout the period of work. Certain other problems such as that of transportation and the short work day also hindered progress. An average of twenty-three enrolled men were available each day during the summer and early fall season from each of the two emergency conservation camps having a blister rust control project. Two blister rust control foremen were assigned to each of the two camps to supervise these enrolled men. Under Rhode Island conditions it is more difficult to make progress on blister rust control work with inexperienced men than in States where Ribes are so plentiful that experience in Ribes identification is quickly gained. All pine lands had to be worked through, using crew formation methods, as the common scouting method used to eliminate land is not satisfactory in this State. It was necessary to strip woodlands in close formation in locating Ribes until the enrolled men had become sufficiently experienced to use a wide formation when suitable. The field experience gained throughout the past season, however, in addition to a mapping project to be carried on this winter, should be of valuable aid in increasing the acreage to be worked during the next field season.

Under the Nira program which did not get started until the second week in September, only a small pine area 290 acres in size was scouted by ten men and 247 currant and gooseberry bushes were found and destroyed. After a short period of work in this pine area in Foster, Rhode Island, the men were transferred to black currant eradication work in Providence. Two hundred and eighty European black currant bushes were found and destroyed in Providence before this work was completed the latter part of October. This finished the black currant eradication work in Providence and completed this project in the State.

Five temporary men will be employed on a blister rust control area and white pine mapping project during the winter months, December, January, February and March. These men are to be employed with Nira funds in order to locate and record needed information on control areas and white pine lands. The maps and written records obtained through this survey will be used to determine, as well as to direct, Ribes eradication work to be carried on next spring and summer as Nira and E.C.W. projects. In addition this survey will indicate the location and importance of white pine in relation to other forest trees.

\* \* \* \* \*

Now that the European black currant eradication project has been completed in Rhode Island it is believed that there is much less chance for the long distance spread of blister rust infection. Also, local control work is being satisfactorily maintained in most of the State's pine areas through periodic scouting for Ribes. Therefore, stress must be laid on the nursery sanitation problem to prohibit the importation of diseased white pine forest nursery stock as well as to grow local ornamental five-leafed pine stock under proper protection. Rhode Island has no nursery growing stock for forestry plantings. Thus the problem of securing healthy forest trees is an interstate one.

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CHRONOLOGY OF THE MASSACHUSETTS CWA-BRC PROJECT

C. C. Perry, Mass.

Monday, November 20: State Leader notified to prepare a plan and budget for a blister rust control project under the Civil Works Administration, and to have the plan ready within one hour. Plans submitted at 3:00 p.m. and taken under advisement by the Chairman of the State Civil Works Board.

Tuesday, November 21: District blister rust agents assembled in Boston for a conference with State Leader and acquainted with the proposed plan.

Wednesday, November 22: No word of approval or disapproval.

Thursday, November 23: Project approved at 3:00 p.m. and agents notified.

Friday, November 24: L.J.N. Fuyat appointed State Supervisor to administer the project.

Monday, November 27: First crews start work in the field.

Saturday, December 2: First payrolls received from the field and first pay checks dispatched to CWA employees.

INDIANS APPLY BLISTER RUST CONTROL MEASURES

J. F. Martin

Inauguration of Emergency Conservation Work on the Indian Reservations during the past summer was most opportune, since it enabled the Indians to undertake the protection of their white pine forests from the destructive blister rust disease. On those reservations where white pine is an important forest tree the Indians recognize its intrinsic value, and are keenly interested in its protection. They understand, probably better than most people, that the absence of forests means no game, no streams, no fish, no work in the woods, and no revenue from timber. Because of this instinctive knowledge, the Indians are quick to recognize the importance of such enemies as the white pine blister rust.

Blister rust has been found on the Red Lake, Lac Courte Oreille and Menominee Reservations. The disease is just getting started in the white pine stands on these reservations. An inspection of over a thousand pines in seven different locations on the Menominee showed about 5% of the trees had become infected with blister rust during the five-year period from 1927 to 1931 inclusive. Hence the Ribes eradication undertaken this past season is especially timely and this work should be pushed as rapidly as possible each season until the disease has been brought under control on all existing or potential white pine tracts.

Although late in starting, control work was performed by the Indians on the Red Lake, Vermillion, Lac du Flambeau and Menominee Reservations. The Indians grasped the importance of the work quickly, found its execution to their liking and took a genuine interest in its success. The work of the eradication crews was excellent and compared favorably with similar work outside the reservations. The Indians soon became skilled in finding Ribes bushes, used care in getting out the roots to prevent sprouting, carefully hung up the bushes so that they could not come in contact with the soil and take root, kept their crew formation well and performed in general as well as a seasoned crew of experienced men. This can be attributed to their natural forest ability and liking for this kind of work, as well as their desire to safeguard their pines. They were hard workers and the men who supervised the control job were enthusiastic over the support and cooperation they received from the Indians.

Although forest fires made almost perpetual demands for fire fighters on the Lac du Flambeau Indian Reservation, three and sometimes four crews worked during a period of slightly over three weeks. On the Menominee eight crews were used, on the Red Lake three, and on the Vermillion one or more.

Each crew was arranged so as to have 10 men in line, two Indian checkers behind the line, and one Indian foreman following the entire crew and checkers. This arrangement worked very effectively and resulted in the protection of about 18 square miles of white pine forest through the destruction of  $2\frac{1}{2}$  million Ribes or over 600 bushes per man day. The following summary shows the amount of blister rust control work performed on Indian Reservations. These figures are not final but are approximately correct.

Reservation	Acres White Pine Protected	Acres Eradicated of Ribes *	Number Ribes Pulled	Man days of Labor
Lac du Flambeau	2,750	4,896	148,700	660
Menominee	4,488	6,510	1,889,641	2,224
Vermillion	80	80	25,100	119
Red Lake	4,500	5,000	444,549	998
Totals	11,818	16,486	2,507,990	4,001

\* Includes protective zones around pine stands.

Systematic checks of the eradication work were made to determine its quality and the efficiency of the men in finding the Ribes. In one of these checks five areas were chosen at random and in each area an acre was carefully inspected with the following results:

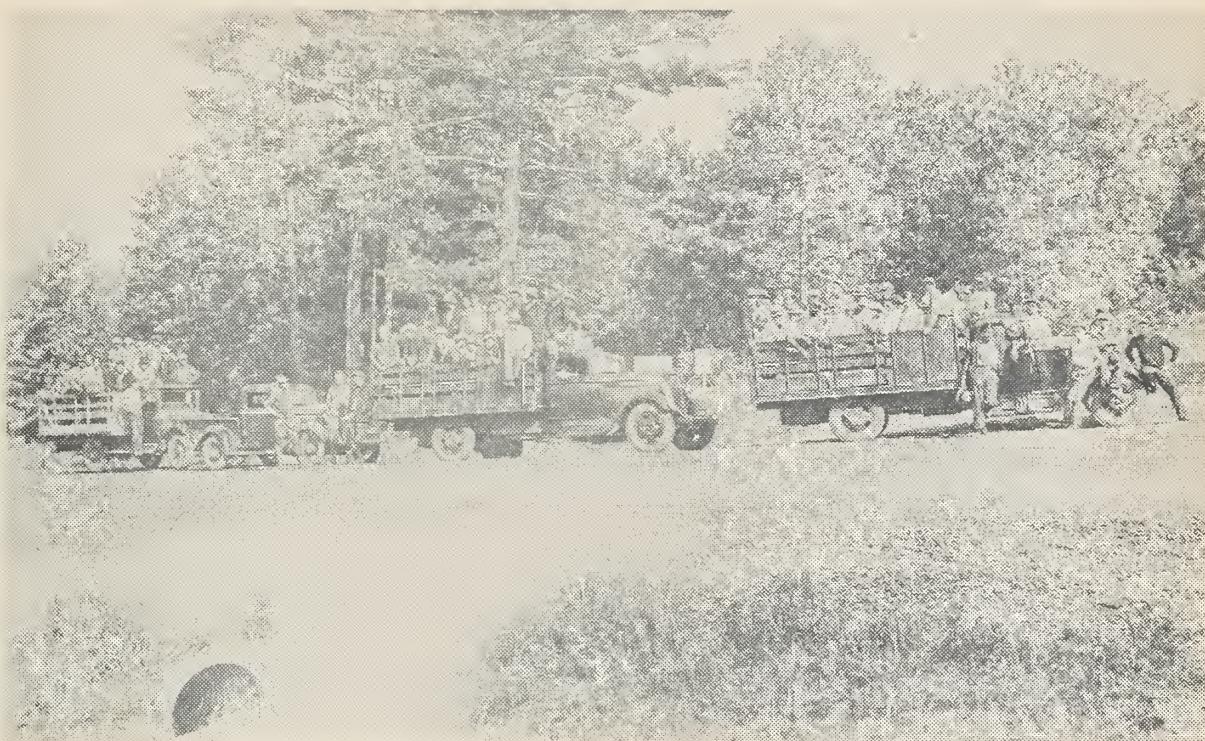
Area	Acres Covered	Number of Ribes	Feet Live Stem
1	1	2	1.5
2	1	9	7.5
3	1	12	9.5
4	1	8	13.5
5	1	3	8.5
Average	1	6.8	8.1

The data shows that the areas averaged about seven plants with an aggregate of eight feet of live stem per acre after eradication. By taking into consideration the fact that before eradication these areas averaged over 150 Ribes and several hundred feet of live stem per acre, one can appreciate the thoroughness of the work.

It should be remembered that while the removal of the Ribes will prevent further infection of the pines it will not stop the development of damage on pines already infected at the time the control work is performed. Therefore, in the area protected, pine damage developing from infections that took place before the Ribes were eradicated may become noticeable during the next few years. The delay in the appearance of the damage is due to the fact that it takes three or more years after infection takes place for the blister rust cankers to reach the killing stage in their development. Unless these facts are known, the damage developing from latent pine infections is apt to be interpreted erroneously, as the result of ineffective control work.

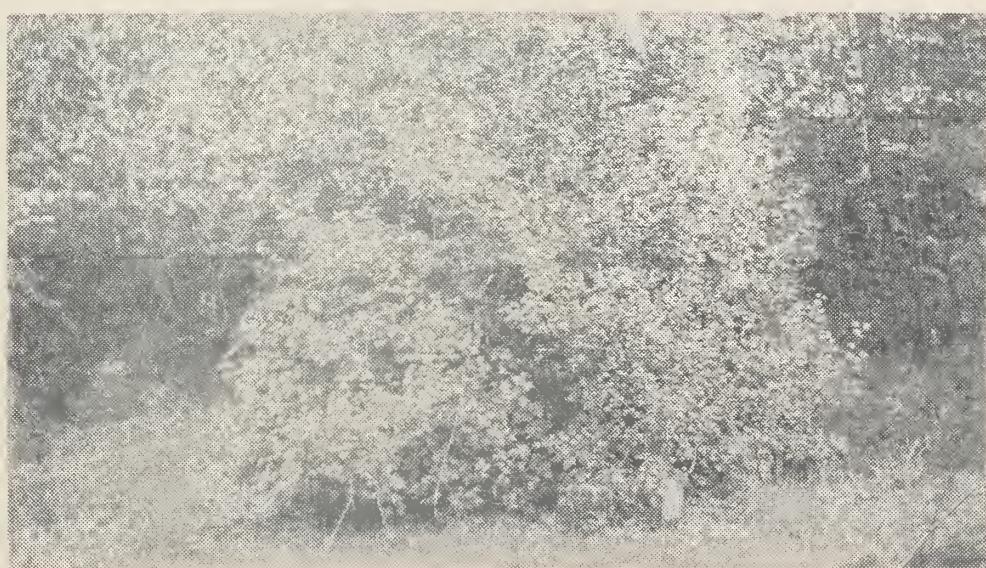
It is highly desirable that one or two trained men continue to survey unworked areas to locate the pine on maps, determine the Ribes conditions on such areas, delimit the parts that will have to be worked by crews, and eliminate portions that are naturally free of Ribes and require no crew work. This kind of a preeradication survey is essential to

the economical application of control measures and should be done prior to starting crew work next spring. It will give a graphic picture of the control requirements of each pine area and permit advance determination of the cheapest and best eradication methods to employ.



Indians Going to Work on E.C.W.-Blister Rust Control  
on the Menominee Reservation in Wisconsin.

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RIBES GROW LARGE IN OREGON  
E. L. Joy

This Ribes glutinosum bush found one mile north of the California-Oregon line on Roosevelt Highway, has a height of 16 feet, a width of 24 feet, a root crown diameter of 6 inches and 6 main stems, of which 3 are about 4 inches in diameter.

MASSACHUSETTS STARTS A CWA-BRC PROJECT

C. C. Perry, Mass.

As a cooperating agency in the Massachusetts Department of Agriculture, we were requested to prepare on short notice a plan whereby just as many unemployed men as possible might be used on a blister rust control project of some sort in connection with the Civil Works Administration program. We responded as best we could with a group of projects designed to employ 130 men at an expenditure of \$30,500.

Project Description:

A. To effect a secondary measure of control of the white pine blister rust disease through the elimination of infected pine branches, and the felling of entire trees where infected with a trunk canker. Work will be performed on lands controlled by various State departments, municipal departments, or semi-public organizations.

B. To proceed with the canvass of the cities in Metropolitan Boston to locate any plantings of European black currants.

C. To prepare control area maps showing the location of pines that need further protection by the elimination of Ribes during the spring of 1934.

Personnel Requirements:

One hundred unskilled laborers will be employed on the canker elimination sub-project. Twenty experienced men will be needed to act as foremen to supervise the unskilled labor if anything worth while is to be accomplished. This is due, of course, to the difficulty involved in determining whether or not a tree is infected, and only experienced men can be used for supervision. In the black currant location sub-project, six men trained in the identification of cultivated Ribes will be employed. In the mapping sub-project ten skilled men can be used if available.

General supervision of all sub-projects will be provided by the regular district agents under the direction of the State Leader. A State Supervisor has been appointed, however, to take over the general administration of the project in conformity with a uniform plan of employing a supervisor to direct all State CWA projects.

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PINE NEEDLE SCALE FOUND ON WHITE PINE IN PENNSYLVANIA

An infestation of the pine needle scale (Chionaspis pinifoliae) has been found near the Greenwood Forest Nursery, Huntingdon County, Pennsylvania.

The scale is present on white pine which ordinarily is a very infrequent host tree. Sometimes this scale is injurious to pitch and Austrian pines and also occurs on Scotch, red, and other hard pines. \*\*\*.  
(Data from the Service Letter of the Pa. Dept. of Forests and Waters, Nov. 2)

INSPECTION TRIP IN NORTHERN PENNSYLVANIA

H. E. Yost, Maryland

In company with Mr. H. N. Putnam, State Leader Dowd of Ohio, and three of his agents, I visited several heavily infected pine areas near Coudersport, Pennsylvania, in November. We inspected a blister rust infection on planted western and northern white pine at Prouty Lick. One Ribes bush was responsible for a 100% infection within a radius of about 200 feet and about 70% or more within the next 300 feet. In the afternoon Mr. Putnam gave us field instruction in mapping white pine near Coudersport. In the evening we discussed mapping and other phases of blister rust control work. The next day we went to Sinnamahoning and examined blister rust on northern white pine on a State forest south of town. Special emphasis was placed on locating young cankers. Several specimens were secured. I believe the trip was justifiable and I found it very educational.

Note: Mr. Putnam in commenting on this inspection trip, states: On Sunday morning we put on field clothes and went down the old road to the Prouty Lick area where Pinus monticola and P. strobus were so heavily infected. A large number of trees, particularly P. monticola, had been killed by blister rust since I visited this area two years ago. I was able to show the boys the result of one Ribes bush located among planted western white pine. The western white pines continued to show a great deal more infection than the eastern white pines closely associated. On Monday we visited the infected eastern white pines at Wyckoff Run, near Sinnamahoning, where we saw a large amount of damage over a larger area than was evident at Prouty Lick. Although Ribes eradication had been performed here in the past and a certain amount of canker pruning had been done, there were still plenty of cankers and several first symptoms. This is an excellent demonstration of the futility of trying to control the disease by cutting off cankers.

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SUMMARY OF NRA - BRC WORK IN OHIO

Oscar J. Dowd, Ohio

The Ohio NRA-BRC work was organized and started early in September with six foremen each in charge of twelve laborers and four checkers or scouts. Projects were started at the Little Mountain native pine area east of Cleveland, the Mohican River area south of Wooster, the Carbondale forest in south-central Ohio, and the Marietta State Experiment Tree Nursery. All eradication work stopped October 10th. The following table gives a brief summary of the season's work.

Acres worked.....	2,585
Ribes pulled.....	34,522
Man-days labor.....	1,289
Supervision, man-days.....	154

Emphasis was placed on getting needy unemployed labor at work promptly in the most important pine areas of the State and on thorough Ribes eradication work.

Since Ribes eradication work stopped, attention has been given to scouting for blister rust infection and a preeradication survey. The only new blister rust infection found this year was on Ribes nigrum in Ashtabula County (north-eastern Ohio), a few miles from a previous rust infection on R. nigrum found by Sheals and Pierce in 1931. Fifteen days were spent on preeradication survey work in November. Sixty-nine plantings of 274,000 trees were visited. Seventeen (25%) of these were eliminated from future consideration in control work, while 52 plantings, comprising 242 acres of white pine, are considered worthy of blister rust control. Estimates show that these can be worked by 150 man days of scouting.

Preeradication surveys of native pine areas and pine plantings will be made during the winter in preparation for the economical eradication of Ribes on these areas in 1934.

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WHAT C.C.C. AND N.R.A. HAVE MEANT TO B.R.C. IN  
WORCESTER COUNTY, MASSACHUSETTS

Wm. Clave, Massachusetts

Since we have become accustomed to taking our depression medicine in terms of initials, it can do no harm to add another to the list. We are all more or less familiar with the terms C.C.C. and N.I.R.A., but B.R.C. is a new way of expressing blister rust control to the public. Unemployed men enlisted in the Civilian Conservation Corps have been given work on the control of the white pine blister rust disease throughout the pine growing regions of the country during the past summer. The eradication of wild and cultivated currant and gooseberry bushes was a job for which these men could easily be trained.

Twenty men from the C.C.C. camp located on the Otter River State Forest in Winchendon were used on blister rust control work from July until the latter part of September. All of the work was done within the bounds of the State Forest to protect the great number of white pines which have been planted there. Approximately 600 acres were cleaned up by the C.C.C. crew, and over 50,000 wild currant and gooseberry bushes were destroyed. The work done by these men has been checked by a federal inspector who pronounced it "especially good work". It is planned to complete the control work on this forest during the 1934 season.

During the first part of September funds were made available by the National Industrial Recovery Act for blister rust control work to relieve unemployment. Eighteen unemployed men in the towns of Barre and Rutland were hired for eradication work. Their work was confined to areas near valuable white pine stands where wild currant and gooseberry bushes were known to grow in abundance. This work had to be discontinued at the end of the month as the leaves had fallen from the wild bushes to such an extent that they were not easily recognized. Approximately 95,000 wild currant and gooseberry bushes were destroyed by these N.I.R.A. crews during the three weeks they were in the field.

AN OLD MAPPING METHOD MODERNIZED  
Charles W. Roe, Wisconsin

In an effort to make a new fire protection map along with regular white pine mapping and to complete the work in as short a time as possible, some method other than pacing all the roads had to be devised in order to obtain the necessary information in Jackson County, Wisconsin. The new method which was finally perfected was merely a modern version of an old method which had formerly been used in the West where most of the surveying was done by counting the revolutions of a wagon wheel and multiplying the result by the circumference of the wheel. The white pine mapping crew at the Arbutus Lake Camp in Jackson County found, however, that the substitution of an automobile for the old-time wagon brought with it certain variations in the accuracy of the calculations unless the following factors were taken into consideration:

1. Temperature
2. Amount of air pressure in the tire
3. Condition of roads
4. Distribution of weight on the wheels

With the exception of the condition of roads, these factors were regulated somewhat by measuring the circumference of the tire whenever there was a variation in the above conditions. To determine the circumference of the tire, a heavy cord was tied around the tire which was to be used, and the car was then backed up until the wheels had made several revolutions. The distance between two of the indentures of the cord was the distance covered in one revolution, or the circumference of the tire. In order to get an accurate measurement of the tire, it was found necessary to have the same conditions present when measuring as when running the roads, such as weight, etc.

At first we tied a white rag to one of the wheels and one man sat on the fender and counted the number of revolutions with a pace tally. On windy days it was found possible to get an accurate count only for a short time because of eye disturbances. Therefore it became necessary to devise a means by which the tire revolutions could be counted from the inside of the car. This problem was solved by the use of two electric contacts; one soldered to the brake drum and used as a ground, and the other on the face of the drum. We then ran a wire from the contact on the face of the drum to a light bulb on the instrument board, and from there to the ammeter. As the wheel revolved, the two contacts on the brake drum closed the circuit, causing the bulb to light. This made it possible for one man to sit in the car and record the number of revolutions made by the wheel.

A chart was made each time we took a new measurement of the circumference. This chart showed the number of revolutions in each chain up to one mile. The following formula was used for making the chart:

5,280 x 12 = the number of revolutions in one chain.  
Circum. x 80

Then by the use of a slide rule, it was simple to figure the number of revolutions in each number of chains.

In checking the roads two men were used; a driver who ran the compass and another man who took notes and recorded the distances. This method has proved very accurate and has made it possible to work in all kinds of weather. A speed of fifteen to twenty miles per hour can be maintained under good road conditions.

Edit: State Leader Kouba informs us that Mr. Roe is a blister rust checker in the State C.C.C. Camps, and since the Ribes eradication season ended the latter part of September he has been mapping white pine along with other preeradication survey work. He states that the above article is merely a sample of Mr. Roe's ability to organize and increase the efficiency of his work.

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CONTROL WORK IN DISTRICT #11, NEW YORK  
H. J. McCasland, N. Y.

Blister rust control work in District #11, New York, was of short duration this year due to the transfer of the agent to C.C.C. Camp No. 5 in Essex County. However, during the month of May, while eradication work was carried on, two townships were completed and 4,000 acres cleared of Ribes.

The enlarged road block maps which were made last fall and spring, were used by the foremen and proved to be very valuable in speeding eradication, for with the aid of these maps no time was lost in scouting areas to be worked to determine methods to be used or the type of area on the particular job ahead.

Upon the return of the agent to the district, mapping was again started. At present three mapping crews are being employed. These crews consist of a regular foreman and a man employed through the N.R.A. We have been quite fortunate in getting men well suited for this type of work, two being engineering school graduates and the other having had experience as a woods craft instructor with the Boy Scouts. The foremen examine the areas, classify the pine and determine where lines are to be run. The helper runs the compass, paces distances and takes the notes, or plots directly in the field, depending on weather conditions. Notes are plotted by foremen on stormy days.

Work is progressing quite satisfactorily and we expect to complete the mapping in three of the largest pine growing townships by the end of the month.

MASSACHUSETTS CIVIL SERVICE COMMISSION ANNOUNCES EXAMINATION  
FOR BLISTER RUST INSPECTORS

C. C. Perry, Mass.

For the purpose of establishing a list for blister rust inspectors in the Division of Plant Pest Control of the Massachusetts Department of Agriculture, the Massachusetts Civil Service Commission has announced an examination to be held January 6, 1934. The duties of the position are stated as follows:

"The duties involve the rendering of assistance to local property owners in the protection of areas of white pine against the attack of the fungous disease known as the white pine blister rust. He must make examinations of all woodland areas for the purpose of locating currant and gooseberry bushes which act as agents in the spread of this disease. The inspector is responsible for all control work performed under his supervision and must see that it is satisfactorily done. He should be familiar with the law governing the conduct of blister rust control work in Massachusetts and other regulations pertaining thereto.

Subjects and weights: Training and experience (2); Practical questions (3); total (5).

Passing requirements: At least 70% in each subject of the examination in order to become eligible.

Physical fitness to be determined by a physical examination."

The examination is open only to citizens of the United States who have domiciled in the commonwealth for one year next preceding the date of filing the applications. The names of veterans who pass the examination will be placed upon the eligible list in the order of their respective standing above the names of other applicants. The salary ranges from \$2.62 $\frac{1}{2}$  per day to \$4.62 $\frac{1}{2}$ . Applications close December 27, 1933.

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GREAT QUANTITIES OF TWINE AND CHEMICALS USED BY CCC  
FORCES IN NORTHERN IDAHO IN ERADICATING RIBES.

Blister rust control work in northern Idaho, according to an article in a recent issue of "Science", was carried on by the Civilian Conservation Corps both by hand pulling and by the use of chemicals. Each strip covered in eradicating Ribes was marked by a string line, and the crews working in that section used 40 tons of cotton twine this season, laying out some 56,000 miles of line. The chemical crews worked the concentrations of wild black currants in the damp stream bottoms, spraying the plants with a commercial weed killer. About 225 tons of chemical were required for the CCC forces in this northern Idaho region.

WHITE PINE MAKES GOOD GROWTH ON LIGHT LAND  
E. C. Mandenberg, Mich.

While checking on the N.R.A. eradication project I ran across a small lumbering operation where quite a number of white pine trees were being cut. These trees were growing on a slightly rolling site and the soil was a gravelly sandy loam, on the light side rather than the heavy. One of our scouts measured and counted the rings on 21 stumps and the average diameter was 18.7 inches, and the average age 39.9 years. I instructed them to send me a three-inch slab from one of these stumps and I now have this in the office. This slab is 23 inches in diameter, has 52 rings on it and 18.2 inches of heartwood. Who said white pine was a slow grower on light land?

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AUTOMOBILE INSURANCE

H. P. Avery

We have received a memorandum from Long and Curry of this city offering automobile insurance at special rates to employees who operate government-owned automobiles. This insurance does not cover you while driving your own personal car. The annual rates are \$8.00 for \$5,000 property damage with \$5,000 and \$10,000 public liability, and \$9.20 where the public liability is \$10,000 and \$20,000. Employees who are interested in this type of insurance may secure full information by writing direct to Long and Curry, Barr Building, Washington, D. C.

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PUBLICATIONS

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Phytopathology 23:841. Oct. 1933, No. 10. (C. ribicola Fischer  
correct citation.)

Hatch, Alden B. - Some Hymenomycetes Forming Mycorrhizae with Pinus strobus. Journal of Arnold Arboretum, July, 1933.

Hawley, Ralph C. - Does Northern White Pine Form a Climax Type? Journal of Forestry, Vol. XXXI, No. 7, November 1933, p. 866-868.

Lachmund, H. G. - Resistance of the Current Season's Shoots of Pinus monticola to Infection by Cronartium ribicola. Phytopathology 23:917-922, November 1933, No. 11.

Mains, E. B. - Studies Concerning Heteroecious Rusts. Mycologia 25 (5): 407-417. Sept.-Oct. 1933.

Steer, Henry B. - Relation of Stumpage and Log Prices to Other Commodity Prices. Journal of Forestry, Vol. XXXI, No. 7, November 1933, p. 783-795.

Weese J. - Ueber den nadelschuttepilz von Pinus strobus. Mitt. Bot. Inst. Techn. Hochsch. Wien 9:22-24, 1932, No. 1.



